



REPUBLIC OF COLOMBIA
SERVICIO GEOLÓGICO COLOMBIANO

REQUEST FOR PROPOSALS
SGC-CDP-029-2021

To provide dating services using the Carbon-14 methods, the AMS technique and the Ar-Ar method, to identify the age of rocks, soils and volcanic eruptions that occurred in Colombia, in accordance with the needs and specifications provided by the Servicio Geológico Colombiano.

BOGOTÁ D.C. NOVEMBER, 2021

1. TIMETABLE

ACTIVITY	DATE	PLACE
SUBMISSION OF REQUEST FOR PROPOSALS	November 29, 2021	The request for proposals document will be sent via email
DEADLINE FOR COMMENTS ON THE PROPOSAL REQUEST DOCUMENT	From November 29 to 2 december 2021 until 5:00 pm (Colombian time)	Documents shall be received via email at cd29@sgc.gov.co
RESPONSE TO COMMENTS AND SUBMISSION OF THE FINAL PROPOSAL REQUEST DOCUMENT	December 6, 2021	The request for proposals document will be sent via email.
RECEIVING PROPOSALS	December 9, 2021 until 4:00 p.m. (Colombian time)	Documents shall be received via email at cd29@sgc.gov.co
RECEIVING PASSWORD AND OPENING PROCEDURE FOR PROPOSALS	December 9, 2021 until 4:30 p.m. (Colombian time)	Documents shall be received via email at cd29@sgc.gov.co
PRELIMINARY EVALUATION REPORT	December 14, 2021	The document will be sent via email.
COMMENTS ON THE REPORT	December 16, 2021 Until 5:00 p.m. (Colombian time)	Documents shall be received via email at cd29@sgc.gov.co
FINAL EVALUATION REPORT	December 20, 2021	The document will be sent via email.
NOTICE OF THE ACCEPTANCE OF THE SELECTED PROPOSAL	December 22, 2021	The document will be sent via email.
IMPROVEMENT AND LEGALIZATION OF THE CONTRACT	Within two days from the communication of the proposal acceptance	Bureau of contracts and agreements of the Servicio Geológico Colombiano (SGC)

2. PRELIMINARY RECOMMENDATIONS

Read the instructions of this document carefully.

1. Please note that only natural or legal persons to whom the SGC has extended an invitation and Consortia or Temporary Unions formed between them may submit proposals.
2. Verify, first of all, that you are not involved in any of the general or special inabilities or incompatibilities to contract
3. Make sure you meet the conditions and requirements stated here.
4. Proceed to gather all the required information and documentation, and verify the validity of the one that requires it.
5. Follow the instructions given in this application to prepare your proposal.
6. Identify your proposal, as indicated in this document.
7. Consider the date and time foreseen for the delivery of proposals in this process, in any case proposals will be received outside of the scheduled time.
8. All enquiries should be made in writing; no personal or telephone enquiries shall be attended.
9. No verbal agreement with personnel of the SERVICIO GEOLÓGICO COLOMBIANO, before or after the signing of the contract, may affect or modify any of the terms and obligations stipulated herein.
10. Proponents by the mere presentation of their proposals, authorize the Entity to verify all the information provided therein.
11. Any communication sent by those interested in this document should be addressed to the Bureau of Contracts and Agreements of the SERVICIO GEOLÓGICO COLOMBIANO, to the following email: cd10@sgc.gov.co
12. The submission of the Offer, by the Proponent, constitutes evidence that the technical specifications, formats and other documents have been fully studied; that it has received the necessary clarifications about concerns or misgivings previously consulted and that it has accepted

that this request for proposal is complete, compatible and adequate to identify the scope of the objects to be supplied and that it has considered all the above to define the obligations acquired by virtue of the contract to be concluded.

13. When there is inaccuracy in the information provided by the proponent or in that of one of the members of the Consortium or the Temporary Union, the SERVICIO GEOLÓGICO COLOMBIANO may reject the proposal.

3. JUSTIFICATION

The **SERVICIO GEOLÓGICO COLOMBIANO - SGC**, is a Scientific and Technical Institute, attached to the Ministry of Mines and Energy - MME, which is part of the National System of Science, Technology and Innovation - SNCTI, to which applies the provisions of Law 80 of 1993 and 1150 of 2007 on administrative contracts and their Regulatory Decrees.

Through Resolution 1239 of November 15, 2017, the ADMINISTRATIVE DEPARTMENT OF SCIENCE, TECHNOLOGY AND INNOVATION - COLCIENCIAS recognized the SERVICIO GEOLÓGICO COLOMBIANO - SGC, as a research center, by complying with the requirements stipulated by COLCIENCIAS for such purposes. This implies that this Entity is recognized as an organization dedicated to developing science and technology, endowed with administration, financial and human resources and infrastructure for the development of this object.

By virtue of the above, the SGC is a Scientific and Technical Institute, recognized by the Administrative Department of Science, Technology and Innovation - COLCIENCIAS as a RESEARCH CENTER, which is part of the National System of Science and Technology (SNCT).

Article 3 of Decree No. 4131 of 2011 specified that the Servicio Geológico Colombiano aims to: *"Carry out basic and applied scientific research on the potential of subsoil resources; advance the follow-up and monitoring of threats of geological origin; manage subsoil information; guarantee the safe management of nuclear and radioactive materials in the country, coordinating nuclear research projects, with the limitations of Article 81 of the Political Constitution, and the management and use of the Nation's nuclear reactor."*

Article 40 of Decree No. 4131 of 2011 established that, in order to fulfill its purpose, the SERVICIO GEOLÓGICO COLOMBIANO shall perform the following functions, among others: *"(...) 3. Generate and integrate knowledge and collect, compile, validate, store and provide, in an automated and standardized way, information on geology, subsoil resources and geological threats, in accordance with the policies of the National Government. (...) 10. Investigate geological phenomena that generate threats and evaluate threats of geological origin with regional and national effects in the national territory. (...) "*

Article 9 of Decree Law 2703 of 2013 specified that the functions of the Directorate of Geohazards are, among others: "(...) 2. Direct the activities conducive to the study, analysis and evaluation of threats of geological origin, as well as regional and national impact in the national territory. 4. Investigate, identify, characterize, monitor, evaluate, diagnose and model geological phenomena that generate threats. 5. Prepare studies and monitor seismic and volcanic activity in the country. (...) 11. Design, install, maintain, operate and update the National Seismological Network of Colombia, the National Accelerometer Network, the Volcano Observatories Networks and the Geodetic Stations Network. "

subnumeral 6.4 of numeral 6 of article 2 of Resolution D-197 of July 26, 2021, established that the following are functions of the Volcanic Hazard Working Group, among others: "(...) 1. Raising lines of research aimed at new knowledge on volcanic hazards and related issues, in accordance with the scientific method and under the framework of the objectives of the working group and the processes carried out by the Entity. 2. Formulate and follow-up on projects related to volcanological research, evaluation of the volcanic threat, and preparation and updating of volcanic hazard maps according to prioritization by volcanic danger in the territory, according to the Entity's guidelines. 3. Carry out field activities aimed at collecting data for the analysis and evaluation of the volcanic threat and preparing and updating volcanic hazard maps, taking into account logistical recommendations and security conditions. 4. Process, analyze and interpret the information acquired through field and laboratory activities, for evaluation, in accordance with established national and international standards. 5. Guide and verify the obtaining of geological, cartographic information, remote sensing, geoarcheology in volcanic terrain and historical volcanic activity, as an input for the research activities of the agency in accordance with technical and scientific standards. 6. Develop models of eruptive scenarios of active volcanoes in the country according to the state of knowledge as input in the preparation of volcanic hazard maps. 7. Propose alternatives and innovation solutions for the implementation of the volcanic threat assessment and volcanic phenomena simulation processes, following the procedures established by the Entity. 8. Support activities related to the evaluation and monitoring of volcanic activity in relation to: volcanic crises, selection of suitable sites for the installation of monitoring network stations in volcanic areas, as well as the generation of models of the internal structure in active volcanoes and monogenetic volcanic fields, in accordance with the annual work plans, taking into account geophysical, geodetic and geological criteria. 9. Broadcast and Disseminate the knowledge resulting from the development of the group's projects, through participation in events and publications in specialized scientific media in accordance with current policies, standards and procedures, as well as representing the institute in the pertinent instances in compliance with plans, programs and projects. (...) 11. Structure, promote and implement the guidelines related to the Science of Technology and Innovation and Risk Management system, in accordance with national policies and the Entity's guidelines, aimed at generating new knowledge. 12. Prepare the terms of reference and define the technical specifications for the acquisition of goods and services based on current legal regulations. 13. Apply the norms, procedures of document management, keep confidentiality and confidentiality in the information according to its

competence, following the guidelines established by the Entity. 14. Support activities related to the implementation of integrated management systems, plans, programs and projects for institutional strengthening in accordance with current regulations. 15. Respond to requests, complaints and claims of internal and external users with opportunity, in accordance with current regulations. 16. Exercise the supervision of contracts and agreements when assigned in accordance with its competence and current regulations. 17. Exercise self-control in all the functions assigned to guarantee their correct execution, in accordance with the principles of administrative action in the exercise of the employment. 18. Provide attention to users and the general public in matters within its competence in accordance with established procedures and current regulations. (...).

That within this context, the SGC, with the support of the Volcanic Hazard Working Group associated with the Geohazards Directorate, is executing the code project No.1001584, called "Volcanic Hazard", the objective of which is to: Evaluate the volcanic threat in the area of influence of active volcanoes and monogenetic volcanic fields of the Colombian territory through volcanological, structural, geoarchaeological and historical investigations and, with the support of high-tech simulations, delimiting the areas that could be affected by volcanic phenomena, strengthening volcanic risk management in the country, through educommunication strategies to authorities and the community".

That among the activities to be executed derived from the project are:

- Carry out detailed volcanological investigations of the most recent eruptive history in active volcanoes and in the monogenetic volcanic fields of the country to understand their behavior, dynamics and eruptive style.
- Carry out historical research on the volcano's activities and geoarchaeology in recent volcanic deposits, to understand the impact of volcanic phenomena in historical and pre-Hispanic times.
- Evaluate the volcanic hazards and prepare or update maps of active volcanoes in Colombia, following the SGC procedure and using high-tech tools, to know the phenomena and areas that could be affected by future volcanic eruptions.
- Strengthen the processes that seek the social appropriation of geoscientific knowledge related to volcanic hazards, in order to have a greater interaction between technicians, authorities and the community that leads to a better understanding of volcanic phenomena to be reflected in risk management volcanic programs.

That on the other hand, the National Development Plan 2018-2022 promotes the adjustment of the functions of the SNCCTI entities in the field of science, technology and innovation, in order to achieve a better specialization of roles. To this end, the SGC requires taking initiatives to the Government so that

their own perspectives and needs are taken into account, while at the same time it could contribute with ideas to the National Government, from the vision of the Mining and Energy Sector.

That in order to the aforementioned, the Servicio Geológico Colombiano must optimize resources, to promote research, and coordination mechanisms of the instances and actors of the Science, Technology and Innovation System, as foreseen and directed by Law No. 1955 of 2019 "By which the 2018-2022 national development plan is issued Pact for Colombia, Pact for equity" which in its article 3 indicates within pacts with transversal strategies the Pact for Science, Technology and Innovation: a system to build knowledge of the Colombia's future and the Pact for mining-energy resources for sustainable growth and expansion of opportunities.

That in accordance with the foregoing and given the reform of the General System of Royalties - SGR carried out by the National Government during 2019, where, among other aspects, the allocation of two percent (2%) was constitutionally established for the function, operation and administration of the system, for the control of the exploration and exploitation of the deposits and geological mapping of the subsoil, the evaluation and monitoring of the environmental licensing of the exploration and exploitation projects of non-renewable natural resources, for the incentive to exploration and production, and taking into account that Law No. 2056 of 2020 regulated the organization and operation of the General System of Royalties, establishing in paragraph 1 of paragraph B of article 7 that "(...) 1. The Colombian Geological Service or whoever takes its place, in addition to the functions established by law, will exercise activities related to knowledge and cartography. geological path of the Colombian subsoil. (...) ", therefore, to the Servicio Geológico Colombiano -SGC, scientific and technical institute and that is part of the National System of Science, Technology and Innovation (SNCTI), from the year 2021 it will be its own knowledge function and cartography of the Colombian subsoil, which will allow it to continue receiving resources from Royalties.

In compliance with these functions, it is essential for the SGC to obtain geochronological information that allows to ordering of geological events in time, which contributes to the generation of geological cartography of the national territory, to the knowledge of stratigraphy, rocks, geological structures, the geodynamics of the country and the analysis of threats of geological origin.

Radiometric dating are analytical techniques that make it possible to determine the absolute age of rocks, minerals and / or organic matter, based on the principle of radioactive decay. It is a technique used to estimate the absolute (numerical) age of geological materials such as rocks, minerals or organic matter, which is achieved from radioactive isotopes; which are based on the decay series of isotopes with constant rates of radioactive decay.

In nature, some chemical elements appear as unstable isotopes (parents) that decay to a more stable isotope (child), this occurs at a characteristic period of time (half-life): therefore, by measuring the

proportion of parent isotope and son in the sample of interest it is possible to determine their age. There are various dating methods such as: U / Pb, Rb / Sr, Sm / Nd, Ar / Ar, Carbon-14, among others; Depending on the chemical composition of the rock, the minerals present, the research interest and presumed age from the stratigraphic position of the geological formations, it is possible to establish which is the most appropriate dating method to use. For young rocks, approximately 50,000 to 100,000 years old. Radiometric methods such as Ar-Ar, Uranium decay series or Li-Th / He can be applied. However, one of the methods widely used in young volcanic rocks is Ar-Ar, since it provides information about the cooling age magma at the time of eruption, this method also has the advantage of dating much older rocks. Thus, Ar-Ar dating method is indicated to know the age of rocks with enough potassium, which are older than 1000 years before the present, and the Carbon-14 method is indicated to date remains of organic matter present in deposits. younger at 50,000 years.

In particular, the Carbon-14 method is used to measure residual radioactivity, that is, the content of carbon that remains in an organic sample after interrupting the exchange of carbon dioxide with the biosphere, either when they die or, in the case of soils enriched in microorganisms, when said exchange is interrupted due to the absence of carbon dioxide. The method selected in this contract for dating soil samples with organic matter. paleosols, coals and peat has been accelerator mass spectrometry (AMS), since this modern method is considered the most efficient way to measure the content of carbon-14, since with conventional methods As liquid scintillation requires more than 10 grams of samples, for AMS only milligrams are required, this is particularly important as the quantity of sample is usually limited. In the AMS method, carbon-14 content is measured directly in relation to carbon-12 and carbon-13 present, which are stable isotopes. This method takes into account the number of carbon atoms present in the sample and the proportion of the isotopes without considering the beta particles.

On the other hand, the Ar / Ar method allows to determine a wide spectrum of geological ages, and is applied in rocks that contain high potassium (K) content, which is a common element in rocks of the earth's crust, which makes this method is a versatile tool to chronologically locate the geological units of an area. By means of this technique they can be obtained; precisely, the ages of the datable material in Quaternary rocks, and it has even been possible to date material generated in the Holocene, which has been a challenge in rock geochronology.

Considering the above, there are several projects of the Entity that require progress in geological knowledge of the country, and radiometric dating is one of the fundamental methods for this purpose. These projects are being carried out by the Volcanic Hazard working group of the Geohazards Directorate.

The stratigraphic, cartographic, geochemical, petrographic and petrological information generated by these working groups, correlated with the ages obtained, will allow establishing the eruptive frequency in the geological record, identifying the recurrence of important changes in the behavior and configuration of the magmatic / volcanic system, and establish the temporal relationship with magmatic, tectonic, metamorphic

and sediment events. In general, geochronology is a tool that contributes to the reconstruction of the evolution of magmatism and volcanism in Colombia and therefore, provides information for the evaluation on the volcanic hazard in our territory.

Under the above considerations, it is necessary to contract Geochronology laboratories that offer radiometric dating services by the Carbon-14 method using Accelerator Mass Spectrometry for samples of paleosols, logs and charred wood taken from pyroclastic deposits and outcrops of active fault zones. whose ages are estimated to be less than 50,000 years BP.

Additionally, it is required to contract the services of dating samples by the Ar-Ar method, using spectrometry to determine the age of domes and volcanic eruptions that occurred in Colombia.

The service to be contracted includes the dating of approximately forty-two (42) samples of paleosols and coals by the Carbon-14 method; and thirteen (13) igneous rock samples by the Ar / Ar method. However, this number may vary, and it is necessary for bidders to send their offer of the unit price for each dating.

The Servicio Geológico Colombiano (SGC) has made six contracts for the Provision of Services since 2013, through the Direct Contracting modality (Law 1150 of 2007) for Science and Technology with a closed list.

4. DEVELOPMENT OF SCIENTIFIC AND TECHNOLOGICAL ACTIVITIES

That in accordance with the provisions of Article 6 of Decree 393 of 1991 and Article 17 of Decree 591 of 1991, in harmony with the provisions of Decree 4131 of 2011, the Servicio Geológico Colombiano, as a scientific and technical institute dedicated to the Scientific research on the potential of subsoil resources, and the follow-up and monitoring of hazards of geological origin, may enter into special cooperation agreements with individuals to carry out scientific and technological activities, research projects and the creation of technologies, aimed at facilitating: promoting, develop and achieve in common any of the purposes set in article 2 of Decree 393 of 1991.

That Decree Law 591 of 1991, which regulates the specific modalities of contracts for the promotion of scientific and technological activities, lists in its article 2, the activities that are understood as scientific and technological. Among them, it is worth highlighting numbers 1 and 3 of the aforementioned article, which indicate the following as activities of this type: *“(...) 1. Scientific research and technological development, development of new products and processes, creation and support of scientific and technological centers and formation of research and information networks. 2. Scientific and technological dissemination, that is, information, publication, dissemination and advice on science and technology. 3. Scientific and technological services that refer to the development of plans, studies, statistics and censuses of science and technology, to the homologation, standardization, metrology, certification and quality control to the prospecting of resources, inventory of terrestrial resources and ordering territorial; to scientific and*

technological promotion: to the holding of science and technology seminars, congresses and workshops, as well as to the promotion and management of total quality systems and technological evaluation".

That in accordance with the provisions of Decree 393 of 1991, to carry out scientific and technological activities or research and technology creation projects, the Nation and its decentralized entities may associate with individuals through the creation and organization of civil and commercial companies and Non-profit legal persons such as corporations and foundations, or through the celebration of special cooperation agreements.

That in accordance with the provisions of Circular No. 00005 of May 16, 2013, issued by the Director General of the Administrative Department of Science, Technology and Innovation - COLCIENCIAS *"in the exercise of the function of guiding the actors of the National System of Science, Technology and Innovation in the interpretation of the Science, Technology and Innovation regulations and in order to define and align the processes for the articulation and optimization of resources of all kinds for science, technology, innovation and the result of these"*; It is necessary to refer to the provisions of the "SECTORAL GUIDE OF PROGRAMS AND PROJECTS OF SCIENCE, TECHNOLOGY AND INNOVATION", to specify the content and scope of the activities classified as science and technology.

That the aforementioned Circular issued by COLCIENCIAS indicates that the *"SECTORAL GUIDE OF PROGRAMS AND PROJECTS OF SCIENCE, TECHNOLOGY AND INNOVATION"*, in accordance with internationally recognized methodologies such as the manuals of the Organization for Economic Cooperation and Development - OECD (Frascati, Oslo , Canberra) and UNESCO guidelines, define science and technology activities as follows: "Science and technology activities (SST) can be defined as all systematic activities that are closely related to generation, production, advance, promotion, diffusion, dissemination, and application of scientific and technical knowledge that applies to all fields of science and technology

That the Law 1150 of 2007 in its 2nd article established that the contractor selection modalities would be the public tender, the abbreviated selection, the merit contest, the direct contracting and minimum amount, and the literal e) of the numeral 4 of article 2, considers as grounds for direct contracting contracts for the development of scientific and technological activities.

That, in the same way, Decree 1082 of 2015 in its article 2.2.1.2.1.4.7. contemplates Direct Contracting for the development of scientific and technological activities, which should consider the definition contained in Decree-Law 591 of 1991 and the other regulations that modify, clarify, add or replace it.

That, in accordance with the foregoing, article 7.4.4 of the SERVICIO GEOLÓGICO COLOMBIANO Contracting Manual, adopted by Resolution No. 009 of January 16, 2014, contemplates as a ground for Direct Contracting, the conclusion of contracts for the development of activities scientific and technological, a condition that is duly justified in the previous documents and studies, and that the aforementioned Manual

contemplates the following: "7.4.4. Contracts for the development of scientific and technological activities".

In accordance with the provisions of article 79 of Decree 1510 of 2013, direct contracting for the development of scientific and technological activities provided for in literal e) of numeral 4 of article 2 of Law 1150 of 2007 will be taken into account the definitions of such in Decree Law 591 of, 1991 and the other norms that modify, add or repeal it.

That according to the foregoing, the SGC shall apply the definitions of scientific and technological activities contained in article 2 of Decree Law 591 of 1991; and in each case it will specify how the contractual object conforms to the foreseen definitions, being able to use auxiliary criteria of interpretation that arise, among others, from: (i) Definitions of specific modalities of contracts for the promotion of scientific and technological activities that are regulated in Decree Law 591 of 1991; including those contained in the articles repealed by Law 80 of 1993, since from these it is possible to deduce the intention of the legislator on what should be understood included in the object of each type of contract in this special matter: (ii) Guidelines or criteria of orientation related to science, technology and innovation projects dictated by the Administrative Department of Science, Technology and Innovation -Colciencias-, namely, the Guideline "Vo. 2 of Science, Technology and Innovation Programs and Projects of August 3 of 2012, annexed to the general methodological manual for the identification, preparation, programming and evaluation of projects and the guidelines that Colciencias will adopt in the future; (iii) Manuals and guidelines of international organizations, such as the Organization for Economic Co-operation and Development —OECD— UNESCO and (iv) the authorized concepts issued by Colciencias, as an entity specialized in science, technology and innovation.

That congruently, the numeral 7.4.44. of the Contracting Manual indicates that "In the preparation of contracts for the development of scientific and technological activities, the provisions of Article 19 of Decree Law 591 of 1991 must be taken into account, according to which, when the nature of the contract so required, the measures for technology transfer will be agreed upon in accordance with the guidelines defined by the National Council of Science and Technology -now Colciencias-. Until Colciencias issues the guidelines established by the standard, the SGC will define the incorporation of technological transparency measures, taking into account the nature of the contract and considering the scope and characteristics of the corresponding scientific and technological activities.

That in accordance with the provisions of article 2.2 1.2.1.4.7 of Decree 1082 of 2015 and bearing in mind the content of the Single External Circular, issued by Colombia Compra Eficiencia, it is observed in the first place that the object of the contracting It is part of the development of scientific and technological activities. Science and technology activities can be defined as all systematic activities that are strategically related to the promotion, diffusion, dissemination, and application of scientific and technical knowledge

and that apply to all fields of science and technology (UNESCO, 1984), in accordance with the provisions of the SGC Contracting Manual, numeral 7.4.4.

That regarding the aforementioned Single External Circular, it includes the basic guidelines to be taken into account by the State Entities when choosing Direct Contracting in the Science and Technology activity modality, in number 13 as follows: *"13. Contracting of science, technology and innovation activities. The contracting of science, technology and innovation activities by State Entities must apply the regime of said activities regardless of the source of financing used"*.

Article 2 of Decree Law 393 of 1991, article 2 of Decree Lev 591 of 1991, article 18 of Law 1286 of 2009, which amended Law 29 of 1990, and CONPES Document 3582 of 2009 establish the activities considered of science, technology and innovation of actors of the National System of Science, Technology and Innovation.

In the event that State Entities are not certain about the classification of scientific, technological and innovation activities, they should go to the Administrative Department of Science, Technology and Innovation - COLCIENCIAS, the competent authority on the matter.

13.1 Contractual typologies for science, technology and innovation activities.

In order for the direct contracting selection modality to proceed, it is necessary for the State Entity, according to its need, to carry out science, technology and innovation activities by means of the celebration of one of the following types of contracts: (a) Special agreements of Cooperation which is celebrated to associate inter-institutional resources, capacities and competencies, and may include the financing and administration of projects. The special cooperation agreement is regulated in articles 6, 7 and 8 of Decree-Law 393 of 199 / in article 17 of Decree-Law 591 of 1991. (b) Financing contracts to finance scientific, technological and innovation activities, with the scope defined in article 8 of Decree-Law 591 of 1991. (c) Contracts for the administration of projects which are regulated in article 9 of Decree-Law 591 and whose purpose is to commission a suitable third party to carry out carry out science, technology and innovation activities, for the management and execution of a project in these matters.

5. SELECTION MODE

Following the provisions of literal e., numeral 4 of article 2 of Law 1150 of 2007, contracts for the development of scientific and technological activities can be contracted directly.

Decree 1082 of 2015, states that in direct contracting for the development of scientific and technological activities, will be take in to account the definitions established by Decree Law 591 of 1991 and other regulations that modify, add or replace it.

As it was analyzed in detail, the object of this contract is framed in the development of scientific and technological activities, specifically, as scientific and technological services, hence, we are within the frame of direct contracting foreseen in the literal e, numeral 4 of article 2 of Law 1150 of 2007.

However, the Entity understands that direct contracting grounds must be interpreted within the framework of the principles that guide the administrative function and fiscal management and, in particular, the duty of objective selection. In this regard, the Constitutional Court ruled as follows:

*“This being so, it established as an exception to tendering or competition, direct contracting, understood as the power that the head of a State Entity to choose the person who is to enter into the contract with the entity, regardless of the procedure of public tendering or competition, **but tie up in all cases to the principle of transparency and the exercise of control over that form or manner of contracting by the competent authorities**”.* (Bold and underlining are not from the original)

In the same way, the Council of State has pointed out:

*“Although the administration has the possibility of entering into this type of contract, without going to public tender or competition, **such freedom is not absolute, since in the selection of the contractor, compliance with the principles of economy, transparency and especially the duty of objective selection, established in Law 80 of 1993 must be guaranteed.**”¹* (Bold and underlining are not from the original)

In this sense, aiming to guarantee transparency and objective selection in the present direct contracting, and with a view to selecting the most suitable contractor for the satisfaction of the raised need, it is intended to summon natural and legal persons nationals or foreigners previously identified by the SGC and indicated above, to submit an offer in the present contracting, in accordance with rules contained in the Proposal Request document.

6. IDENTIFICATION OF THE CONTRACTUAL TYPE: PROVISION OF SERVICES

OBJECT: To provide the services of dating samples by the Carbon-14 methods, AMS technique and the Ar-Ar method, to determine the age of rocks, soils and volcanic eruptions that occurred in Colombia, according to the needs and specifications provided by the Servicio Geológico Colombiano.

¹ CONSEJO DE ESTADO, SALA DE LO CONTENCIOSO ADMINISTRATIVO, SECCIÓN TERCERA, Consejero Ponente: Germán Rodríguez Villamizar. Sentencia 1577 de abril 14 de 2005.

This contracting is framed in the exercise of the missionary functions of the SERVICIO GEOLÓGICO COLOMBIANO, mainly, those provided for in articles 3 and 4 of Decree Law 4131 of 2011.

CHAPTER I GENERAL INFORMATION

1.1 OBJECT OF THE CONTRACT

To provide the services of dating samples by the Carbon-14 methods, AMS technique and the Ar-Ar method, to determine the age of rocks, soils and volcanic eruptions that occurred in Colombia, according to the needs and specifications provided by the Service Colombian Geological.

1.2 OFFICIAL BUDGET

For the method of C-14, the COLOMBIAN GEOLOGICAL SURVEY has established a budget of up to **TWENTY-SEVEN THOUSAND FOUR HUNDRED TWENTY-FOUR DOLLARS AND EIGHT CENTS OF DOLLAR (USD \$27,424.8)** including IVA and other taxes, fees and contributions as may be applicable.

For the method of radiometric dating by the Ar / Ar method, a budget of up to **EIGHTEEN THOUSAND EIGHT HUNDRED FIFTY-ONE DOLLARS AND NINETY EIGHT CENTS (USD \$ 18,851.98)** including IVA and other taxes, fees and contributions to that there is place.

The value of this contract is covered by the Budget Availability Certificate No. SGR 208421 issued by the head of the Budget Office of the SERVICIO GEOLÓGICO COLOMBIANO.

Nota: Offers that exceed the available budget will not be considered.

1.3. COMMENTS TO THE PROPOSAL REQUEST DOCUMENT

The **SERVICIO GEOLÓGICO COLOMBIANO** shall only receive comments to the Proposal Request document, in writing on the dates indicated in the timetable, via e-mail cd029@sgc.gov.co

1.4. CLARIFICATIONS TO THE PROPOSALS

In accordance with the provisions of Law 1150 of 2007 and Decree 1082 of 2015, within the strictest respect for equal treatment of proponents, the SERVICIO GEOLÓGICO COLOMBIANO may request any or all of them the clarifications or information it deems pertinent, in order to clear up any doubtful, obscure or equivocal points of the proposals. In these cases, such responses may in no way constitute an addition or complement to the proposal submitted, in which case they will be inadmissible.

1.5. CITIZEN SUPERVISION

The citizen supervision bodies may carry out their activity during the pre-contractual, contractual and post-contractual stage in this contract, in accordance of current regulations.

1.6. PROPOSAL

The proposal must be submitted, in digital medium via email **cd029@sgc.gov.co**, duly signed by the Legal Representative of the proponent, in accordance with the order and requirements established in the Proposal Request document, with all its formats and appendixes. In case of not offering the two required methods, the proposing laboratory should only fill out the annexes and documents for the dating method that it offers.

Bidders must deliver its proposal in English and Spanish, in accordance with the provisions of this Proposal Request documents and attach the required documentation.

The proposal must be submitted without any erasures, amendments or alterations that would cause doubt about the offer, unless a clarification is given, which is understood to be in truthful by the signature of the Proponent at the bottom of corrections.

Offers must be submitted for unit value including all taxes and withholdings in US dollars.

Proposals submitted after the time and day set for the closing of this process shall be considered untimely and will not be accepted.

The **SERVICIO GEOLÓGICO COLOMBIANO** shall not require stamps, authentications, original or authenticated documents, acknowledgment of signatures, official translations, or any other kind of formalities or ritual requirements, except when peremptory and expressly required by Special Laws (Numeral 15, Art. 25, Law 80 of 1993).

1.7. PUBLIC CHARACTER OF THE INFORMATION

The Offeror knows and accepts that, pursuant to the principles of transparency, equality and impartiality, all the information included in its proposal to accredit the fulfillment of requirements to participate and for the purposes of the evaluation is public, and any person may obtain a copy of it.

The Offeror shall be responsible for the handling of the information received from the **SERVICIO GEOLÓGICO COLOMBIANO** and in accordance with the Constitution and the law, it must maintain the confidentiality that is required and respect copyright, moral and property rights.

The offers submitted will be public and any document specified therein should be treated as confidential or with discretion only when it's established in the Constitution or Law. Accordingly, if the document contains texts of confidential nature without normative support should be understood as unwritten.

1.8. CONFIDENTIALITY OF PROPOSALS

Offerors must indicate in their proposals which of the documents provided are reserved and invoke the rule that protects reservation, in order to comply with the provisions of paragraph 4 of Article 24 of Law 80 of 1993. If the offeror does not makes an express pronouncement protected by law, it will be understood that the entire proposal is public.

1.9 VALIDITY OF THE PROPOSAL CONDITIONS

The conditions offered in the proposal must remain valid from the submission of the proposal and at least until the term of ninety (90) more calendar days, counted from the date and time of the closing of the process.

1.10 TERM CONTRACT

The execution period was established until November 30, 2022, or until the budget is exhausted, whichever comes first.

1.11 PROCESS START DATE

The selection process will begin, in accordance with the schedule established in this document.

1.12 OBSERVATIONS TO THE PROPOSAL REQUEST DOCUMENT

Comments on the proposal Request document should be received directly by email at **cd029@sgc.gov.co**, up to the time and date indicated in the schedule of this proposal Request and will be resolved by the **SERVICIO GEOLÓGICO COLOMBIANO** in the specified time scheduled.

Once the previous term has been excluded, the Entity shall. not accept any further concerns regarding the content and scope of the stipulations and requirements contained in this document.

Queries, questions and the corresponding answers may be resolved by fax or email.

1.13 PROPOSAL PRICE

All values must be listed by the proponent in USD dollars, adjusted to the currency either by excess or by default.

The prices stated in the proposal shall be the basis for the contract that should be signed and will not be readjusted.

The prices offered must include all costs and other expenses inherent to the satisfactory fulfillment of the contract, including contingencies, administration expenses, taxes, contributions and profits of the Contractor. These prices should not be subject to revisions and changes.

In case of arithmetic errors, the **SERVICIO GEOLÓGICO COLOMBIANO** shall make the mathematical correction, prevailing the unit values and calculating the new total value of the Proposal.

The SGC will deduce local taxes of up to 39% of the total value, offerors should consider this percentage on their proposals.

1.14 DELIVERY OF PROPOSALS

This process shall close at the time and date indicated in the schedule of this contractual process and the proponents via email cd029@sgc.gov.co, proponents must send their offer and the corresponding appendixes in "**pdf**" format. **Protected by password**, which must be duly completed in Spanish and signed by the legal representative of the proponent. Subsequently, within 30 minutes after the closing time, the Offeror must send the password that opens the proposal to the email previously indicated so that it can be opened by the SGC.

Proposals may be delivered, before the closing time of the process, via email cd029@sgc.ov.co.

After the date and time indicated, no Proposals should be received. The Entity will not assume any responsibility, for not taking into account any proposal that has been incorrectly delivered or identified.

In the event that a **proponent** submits more than one proposal, the Entity shall verify and will have as the **ONLY** valid the closest one first in time. It is the sole responsibility of the **bidder** to send and verify that their proposal in "pdf" format. Locked with a password so that it is considered confidential and private until the deadline for submitting the document key according to the timetable scheduled.

In any case, the **SERVICIO GEOLÓGICO COLOMBIANO** will consider the submitted offer as valid even if it is not sent protected by a password. The above is understood to be accepted by the Offeror upon submission of its **Proposal**.

1.15 OPENING PROCEDURE

At the time and date indicated, the proposals sent by email will be opened and a minute will be drafted, which should be signed by the attendees, a representative of the Technical Area and a representative of the Contracts and Agreements Bureau and it should be made public.

1.16 PROCESSING OF APPENDIXES

All appendixes and forms indicated in the Proposal Request document must be fully completed. Proponents must fill out, in their entirety, the forms of quantities and prices corresponding to their proposal.

1.17 GROUNDS FOR REJECTION

Proposals will not be considered in any of the following events:

- o When they are presented by a natural or legal person other than those who have been invited to submit a proposal.
- o When a Consortium or Temporary Union is formed with companies other than those previously invited by the SGC.
- o When they do not conform to the Proposal Request document. It will be considered that a proposal is not adjusted when it lacks any of the required documents that cannot be corrected; its content is found to be inaccurate or does not comply with what is stipulated for each of them.
- o When the bidder is involved in any of the causes of inability or incompatibility established in article 8, Law 80 of 1993, as well as in the other legal provisions in force.
- o When the proposal is submitted out of time.
- o When the documents necessary for the comparison of the proposals contains amendments that are not duly authorized or saved with the signature of the offeror or whoever signs the document.
- o When inconsistencies are found in the proposal documents or any attempt of fraud or deception by the bidder to the entity or to the other participants is discovered, without perjury of the other legal actions that may be initiated.
- o When it does not comply with the minimum technical conditions established in the proposal request.
- o When it is not corrected or when it is incorrectly corrected within the term established for that purpose by the Entity.

- o When the bidder does not provide the certification of the legal capacity to present an offer and contract and despite being required by the Entity to provide this document, it does not do so in the time established for that purpose.
- o When the value of the proposal exceeds the budget established by the Entity.
- o When the time and date established in the schedule arrives, the proponent does not send the password, in case the document is protected with a password.

The absence of requirements or lack of documents regarding the future contracting or the bidder, not necessary for the comparison of the proposals will not serve as a sufficient title for the rejection of the proposals made (Law 80 of 1993, Article 25, Numeral 15, Item 2).

The others contemplated in this Proposal Request document and in the Constitution and the law.

CHAPTER II

2 MINIMUM PARTICIPATION REQUIREMENTS AND PROPOSAL DOCUMENTS

2.1 MINIMUM PARTICIPATION REQUIREMENTS

Only those who have received an invitation to participate in it may participate in this process, as long as they meet the requirements set forth below:

- 1) Are considered legally capable to present proposals and celebrate contracts with the State and are not subject to inability or incompatibility to contract, in accordance with the provisions set forth in the legislation and specifically in Articles 8 and 9 of Law 80 of 1993 and 18 of Law 1150 of 2007 and its regulatory decrees.
- 2) Present the proposal within the deadlines and in the place indicated in the Proposal Request document.
- 3) Bidders must deliver its proposal in English and Spanish, in accordance with the provisions of this Proposal Request documents and attach the required documentation.
- 4) Present the proposal whose value does not exceed the estimated official budget.
- 5) Fulfill the minimum legal, technical and financial requirements established in this Proposal Request document.
- 6) The members of the Consortium or the Temporary Union, made up of companies previously invited to the process, must designate the person who, for all purposes, will represent them and indicate the basic rules that regulate the relationships between them.
- 7) Legal persons individually considered or in Consortia or Temporary Unions must prove that its length will not be less than the term of the contract and one (1) year further.

2.2 REQUIREMENTS AND QUALIFYING DOCUMENTS

During the process of review, analysis and assessment of the proposal, the **SERVICIO GEOLÓGICO COLOMBIANO** may request from the bidders the clarifications and documents it deems pertinent in relation to the issues involved in their proposals

2.2.1 CONDITIONS RELATING TO LEGAL CAPACITY

The bidder must present all the documents listed below, in the same order as indicated here.

2.2.1.1 LETER OF SUBMISSION (APPENDIX No. 1)

A cover letter must be signed by the Legal Representative of the legal person. In this letter, the proponent shall state under the seriousness of oath that it is not involved in any causes of inability, incompatibility, conflict of interest or in the prohibitions established in the Political Constitution, and other regulations applicable to the matter.

When the proponent includes manifestations or conditions within the presentation letter or in any part of the proposal that are contrary to the object, scope, obligations or technical specifications of this process, it will be grounds for REJECTION OF THE PROPOSAL. However, the Entity will request that the aspects it deems pertinent be clarified.

In the cover letter, the Offeror must indicate which of the information provided in the proposal is of a reserved nature, indicating the rule that gives it such nature.

2.2.1.2 COPY OF DNI OR PASSPORT OF THE LEGAL REPRESENTATIVE.

The Offeror must present a copy of the citizenship card of the Legal Representative and in case of Consortia or temporary unions, a copy of the citizenship card of the Legal Representative of each of the legal persons that are members of the Consortiums or Temporary Unions, and the DNI/ certificates of the natural persons that are members. In the event that the Legal Representative is of foreign origin, a copy of the Passport may be submitted to validate the identity of the Legal Representative.

2.2.1.3. COPY OF DOCUMENTS THAT PROVIDE THE EXISTENCE AND LEGAL REPRESENTATION OF THE PROPOSER

Proposers must prove their existence and legal representation, with the appropriate document issued by competent authority in the country of their domicile, with an issuance date no greater than sixty (60)

calendar days prior to the closing date of the selection process, stating its existence and proving the condition that its duration may not be less than the term of execution of the contract and one (1) year more.

2.3 TECHNICAL QUALIFYING REQUIREMENTS.

ACCEPTANCE OF APPENDIX No. 2 "TECHNICAL SPECIFICATIONS"

The proposer must provide this appendix duly signed by the legal representative, with which it undertakes, if selected in this process, to comply with all the requirements therein.

The SERVICIO GEOLÓGICO COLOMBIANO (SGC) has verified that all invited laboratories have references on the quality of their results and evidence of standardization, by showing that they participate in international intercomparison exercises and through a list of international publications in indexed journals.

Additionally, it will be verified for the Ar-Ar method that the selected laboratories have a multicollector-ICP mass spectrometer with sufficient resolution to date Quaternary rocks. Therefore, none of the guests should attach any additional technical requirement.

2.4 FINANCIAL QUALIFYING REQUIREMENTS

ECONOMIC PROPOSAL

Within the proposal, the bidder must specify the unit cost in US dollars (USD) for each sample of: a. Sample pre-treatment and b. The AMS technique Carbon-14 dating service, for which must fill out Appendix 3 for the corresponding technique.

Within the proposal, the bidder must specify the unit cost in US dollars (USD) for each sample of: a. Sample pre-treatment and b. The Ar-Ar method dating service, by noble gas mass spectrometry, for which you must fill out Appendix 3 for the corresponding technique.

CHAPTER III

EVALUATION AND QUALIFICATION OF PROPOSALS

3. EVALUATION COMMITTEE

The Evaluation Committee shall be appointed by the authorizing expense officer of the **SERVICIO GEOLÓGICO COLOMBIANO**, will be subject to disqualifications and incompatibilities and conflicts of interest, recommending to the head of the Entity or his delegate the meaning of the decision to adopt in accordance with the evaluation effected. The advisory nature of the committee does not exempt it from

the responsibility of carrying out the work entrusted to it. In the event that the head of the Entity or his delegate does not accept the recommendation made by the Evaluation Advisory Committee, he must justify it. The committee, when it deems it necessary, may request explanations from the bidders in order to clarify the possible inconsistencies that may arise, if applicable.

Likewise, the Head of the Entity or his delegate, may contract individuals in order to evaluate the proposals presented within this contracting modality when the conditions so require, a fact that must be fulfilled, in accordance with the provisions of Decree 1082 of 2015, carrying out this work objectively and adhering to the Proposal Request and its Addenda.

3.1. EVALUATION TERMS AND CLARIFICATION OF PROPOSALS

The comprehensive suitability studies (economic and technical), necessary for the evaluation of proposals, will be analyzed and reviewed by the Assessment Committee appointed by the SERVICIO GEOLÓGICO COLOMBIANO, on the dates indicated within the schedule.

3.2. VERIFICATION PROCEDURE AND EVALUATION OF PROPOSALS

To verify the proposals, the fulfillment of the following minimum requirements will be taken into account:

VERIFICATION CRITERIA	
LEGAL VERIFICATION, QUALIFYING REQUIREMENT	COMPLY/FAIL
FINANCIAL VERIFICATION, QUALIFYING REQUIREMENT	COMPLY/ FAIL
TECHNICAL VERIFICATION, QUALIFYING REQUIREMENT	COMPLY / FAIL

The Servicio Geológico Colombiano shall verify each proposal in accordance with the principles of prevalence of the general interest, legality, planning, equality, transparency, economy, responsibility, objective selection, speed, morality, efficiency, impartiality, publicity, contradiction, efficiency, balance and commutativity. Likewise, it will evaluate only the proposals not discarded, that is, those that were classified according to the legal, financial and technical analyzes.

LEGAL QUALIFICATION: Proposals that meet all of the requirements indicated in paragraphs 2.2 of this document will be legally authorized.

TECHNICAL QUALIFICATION: Proposals that comply with the provisions of numeral 2.3 of this document will be technically qualified.

FINANCIAL QUALIFICATION: Proposals that meet all of the requirements indicated in section 2.4 of this

document will be authorized.

3.3 SELECTION CRITERIA

In order to guarantee the selection of the most favorable proposal for the **SERVICIO GEOLÓGICO COLOMBIANO** and for the purpose that is intended to be satisfied with this Public Invitation, the only evaluation criterion will be the lowest value offered, taking into account the estimated budget, which It will be listed in APPENDIX No. 3 - FINANCIAL PROPOSAL, after compliance with the legal and technical qualifying requirements.

For the purposes of setting the price offered, bidders must take into account all costs, expenses, taxes and other emoluments that it deems necessary for setting the economic proposal.

In accordance with the provisions of article 2.2.1.1.2.2.4., Subsection 2 - Selection, of Decree 1082 of 2015, when, in accordance with the information available to it, the **SERVICIO GEOLÓGICO COLOMBIANO** estimates that the value of a proposal is artificially low, will require the bidder to explain the reasons that support the value offered. After analyzing the explanations, that the value of the proposal on which the **SERVICIO GEOLÓGICO COLOMBIANO** had doubts about its value, responds to objective circumstances of the offeror and its proposal that do not put the fulfillment of the contract at risk if it is awarded to such offer, the evaluation committee will recommend.

3.4. CLARIFICATIONS

Within the strictest respect for equal treatment of bidders, the Servicio Geológico Colombiano may request any or all of them the necessary clarifications or information in order to clear up any doubts about the proposals.

3.5 ESTIMATION, CLASSIFICATION AND ALLOCATION OF FORESEEABLE RISKS THAT MAY AFFECT THE ECONOMIC BALANCE OF THE CONTRACT

In accordance with the provisions of article 4 of Law 1150 of 2007 and Decree 1082 of 2015, the estimation, classification and assignment of the foreseeable risks involved in this contract is made below.

3.5.1. RISKS ASSIGNMENT TO THE CONTRACTOR

As of the date of signing of the Contract, the Contractor assumes the effects derived from the risks listed below, in addition to those arising from other clauses or stipulations of the Contract, its annexes and appendices or derived from the nature of the Contract.

Foreseeable risks

In consideration of the characteristics of the Procurement Process, the foreseeable risks are identified below.

Economic Risks

The Contractor assumes all the foreseeable risk of market behavior, such as fluctuation in the prices of inputs, shortages and speculation thereof, among others.

The Contractor assumes all the foreseeable risk of the behavior of inflation in Colombia and, consequently, assumes the effects, favorable or unfavorable, of the evolution of the real inflation of Colombian peso currency, regardless of whether or not the evolution coincides with any forecast calculation of known pairs not made by its counterpart. As a result of the foregoing, the Contractor assumes the effects, favorable or unfavorable, derived —among others— from the following phenomena associated with inflation:

- a) The variation in the market prices of the inputs necessary to carry out the Contract, including the value of the equipment, elements, materials, systems and programs required in accordance with the Contract.
- b) The variation in the prices of the remuneration of the personnel required in the Contract or any other necessary resource to execute the Contract.

Profit risk

The Contractor shall assume the risk derived from the profit of the Contract, considering the obligations assumed and the distribution of risks agreed in the Contract. As a consequence of the foregoing, the Contractor will bear the effects, favorable or unfavorable, derived from variations in the profitability of the business and obtaining profits or suffering losses.

Financial risks

The contractor assumes all risks derived from the achievement of financing or liquidity risk and the risk of financial conditions.

Regulatory risk

The Contractor assumes all the risk derived from variations in Colombian legislation and, consequently, assumes the effects, favorable or unfavorable derived from any sovereign decision of the Congress of the Republic, of the authorities of the Executive Branch of the Public Power or of the jurisdictional authorities. Includes acts of authority, confiscation, embargo, lawsuits; the licenses and permissions of copyright and intellectual property of software, materials, equipment and techniques to be used by the Contractor.

Technological Risks

The Contractor assumes all the risk derived from eventual failures in telecommunications, availability of coverage, availability and suspension of public services, the advent of new technological developments or standards that must be taken into account for the execution of the contract, as well as technological obsolescence, operation and management of equipment and tools; as well as the equipment and means necessary for the development of the Contract.

Force Majeure Risk

The Contractor assumes the entire risk of destruction or loss of its own goods, elements and equipment intended for the performance of the Contract or damage to the Contractor's personnel. Consequently, the Contractor assumes the unfavorable effects derived from all and any data, damages —including consequential damages and lost profits — or losses of its goods or damages to the people who make up the personnel provided by the Contractor for the execution of the Contract caused by Force Majeure or by third parties other than the SGC, without prejudice to its power to demand from third parties other than the SGC the repair or compensation of direct and / or subsequent damages when appropriate..

3.5.2. RISK DISTRIBUTION MATRIX

The risk distribution is summarized in the attached document.

CHAPTER IV CONTRACTUAL CONDITIONS

4.1 PAYMENT MODE

The SERVICIO GEOLÓGICO COLOMBIANO shall pay the value of this contract against each delivery of results accomplished by the contractor, upon receipt satisfaction of the Supervisor, according to the groups of samples sent by the SGC for the corresponding procedure and in accordance with the contracted unit price.

Payments in US dollars should be delivered at the representative market rate of exchange (TRM) of the effective date of payment, after verification by the SGC supervisor of compliance with each and every one of the obligations of the Contract and must be made directly to each laboratory by direct transfer to the international bank account indicated in the proposal.

4.2 EXECUTION TIME

The term of execution of this contract is until November 30, 2022, or until the budget is exhausted, whichever occurs first, deemed from the fulfillment of the contract execution requirements demanded by law.

4.4 GUARANTEE

In accordance with article 2.2.1.2.1.4.5 of Decree 1082 of 2015 "Non-obligatory nature of guarantees" in direct contracting, the requirement of guarantees is not obligatory and the justification for demanding them or not must be in the studies and previous documents.

Now, and considering that it is a foreign company, compliance risks are minimized with the requirements established in the form of payment where it was established that the Servicio Geológico Colombiano shall pay the dating service for each effective delivery of results per unit value one once it is satisfactorily received by the supervisor.

4.5 EXCLUSION FROM ALL EMPLOYMENT RELATIONS

In accordance with the provisions of numeral 3, article 32, Law 80 of 1993, in any case does the contract to be concluded through this selection process generate a labor relationship, or social benefits, with respect to the Contractor or the personnel that the latter occupy for the development of the contracted object.

4.6 CONTRACT ASSIGNMENT

Contractor may not assign the contract, without prior and express consent of the **SERVICIO GEOLÓGICO COLOMBIANO**.

4.7 SUPERVISOR

The **SERVICIO GEOLÓGICO COLOMBIANO** shall appoint a Supervisor for the entire duration of the execution of the contract to verify that the contract is being developed in accordance with the technical specifications, without this supervision relieving the Contractor of its responsibility.

4.8 IMPROVEMENT, LEGALIZATION AND EXECUTION OF THE CONTRACT

The contract resulting from this selection process will be perfected when signed by the parties, within two (2) business days following the acceptance of the proposal. For its execution, the corresponding budget record is required by the **SERVICIO GEOLÓGICO COLOMBIANO**.

4.9 CONTRACTOR EXPENSES

All costs that refer to the payment of taxes, duties, fees, and contributions that are caused in the development and execution of the contract or based on it shall be borne by the contractor.

For all purposes, it is considered that the value of the proposal includes the sums that must be paid for taxes.

4.10 CONTRACT SETTLEMENT

In accordance with the provisions of article 11 of Law 1150 of 2007, the term for the bilateral settlement of the contract will be four months and in accordance with what is enshrined in the stated regulation, counted from the date of end of the contract or issuance of the administrative act that orders the conclusion.

4.11 UNILATERAL INTERPRETATION

If during the execution of the contract, discrepancies arise between the parties regarding the interpretation of any of its provisions that may lead to the paralysis or serious impairment of the fulfillment of the object of the contract, the **SERVICIO GEOLÓGICO COLOMBIANO**, if no agreement is reached, shall interpret in an administrative act duly motivated, the stipulations or clauses object of the difference, in accordance with the provisions of Law 80/93.

4.12 UNILATERAL AMENDMENT

If during the execution of the contract and to avoid the paralysis or serious impairment of the fulfillment of the object of the contract it is necessary to introduce variations in the contract and if previously the parties do not reach the respective agreement, the **SERVICIO GEOLÓGICO COLOMBIANO** will modify it by means of an act administrative duly motivated, by means of the suppression or addition of works, works, supplies or services.

If modifications alter the value of the contract by twenty percent (20%) or more of the initial value, the **CONTRACTOR** may waive the continuation of execution. In this event, the liquidation of the contract should be ordered and the **SERVICIO GEOLÓGICO COLOMBIANO** shall adopt, immediately, the measures that are necessary to guarantee the completion of the object thereof, in accordance with the provisions of Law 80 of 93 article 16.

4.13 UNILATERAL TERMINATION

The **SERVICIO GEOLÓGICO COLOMBIANO**, in an administrative duly motivated act, shall provide for the early termination of the contract in the following events:

- a. When the requirements of the contract requires so or the situation of public order imposes it.
- b. Due to death or permanent physical disability of THE CONTRACTOR, if it is a natural person, or due to the dissolution of the Contractor's legal entity.
- c. By judicial interdiction of THE CONTRACTOR or declaration of bankruptcy.
- d. Due to cessation of payments, bankruptcy or judicial seizures of the CONTRACTOR that seriously affect the fulfillment of the contract.

The initiation of a Concordat procedure, shall not give rise to the Declaration of Unilateral Termination. In such event, the execution should be made subject to the Rules on Debtor's Business Administration in Concordat. The **SERVICIO GEOLÓGICO COLOMBIANO** will provide the necessary inspection, control and surveillance measures to ensure compliance with the contractual object and prevent its paralysis in accordance with Law 80 of 1993.

4.14 CONTRACT'S EXPIRY

The expiration is the sanction that the **SERVICIO GEOLÓGICO COLOMBIANO** may impose on THE CONTRACTOR, consisting of the Termination of the Contract by means of a motivated administrative act, which orders its liquidation in the state in which it is found, if any of the facts constituting non-compliance occurs which seriously and directly affects its execution and shows that it can lead to its paralysis.

In the event that the **SERVICIO GEOLÓGICO COLOMBIANO** decides to refrain from declaring the Expiration, it shall adopt the necessary Control and Intervention Measures, which guarantee the execution of the contracted object.

The Declaration of Expiration should not prevent the **SERVICIO GEOLÓGICO COLOMBIANO** from immediately continuing the execution of the contracted object through another CONTRACTOR, who in turn may be declared Expiration, when it occurs.

If the Expiration is declared, there should be no compensation for THE CONTRACTOR, who will be entitled to the sanctions and inabilities provided in the current regulations that regulate the matter.

4.15 CONTROL BY THE SERVICIO GEOLÓGICO COLOMBIANO

The **SERVICIO GEOLÓGICO COLOMBIANO** shall exercise comprehensive monitoring of the contract, through the supervisor, who will perform the functions described in resolution D-166 of April 4, 2014.


The CONTRACTOR shall provide the supervisor with all the necessary facilities to carry out the control and supervision of the contract and in general any other activity that is directly related to it.

**CHAPTER V.
APPENDIXES**

APPENDIX 1 – Letter of application

APPENDIX 2 - Technical specifications

APPENDIX 3 – Economic proposal


RUBIELA GONZÁLEZ GONZÁLEZ
Secretary-General

Projected by	Ibeth Dalila Lozano	Lawyer - Bureau of Contracts and Agreements
Reviewed by	Diana Carolina Cárdenas	Lawyer - Bureau of Contracts and Agreements
Reviewed by	José Alberto Higuera	Lawyer - Legal Advisory Office
Reviewed by	Ivan Felipe Dallos	Lawyer - General Secretariat

APPENDIX No.1
LETTER OF APPLICATION

Date: _____

SERVICIO GEOLÓGICO COLOMBIANO

Bogotá, D.C

Colombia

Subject: Direct Contracting - Science and Technology No. SGC- CDP-029-2021 whose purpose is to "provide sample dating services by the Carbon-14 methods, AMS technique and the Ar-Ar method, to determine the age of rocks, soils and volcanic eruptions that occurred in Colombia, in accordance with the needs and specifications provided by the Servicio Geológico Colombiano"

Reference: Proposal submission for

The undersigned _____ in my capacity as legal representative of **[name of the proposer]** in accordance with the conditions set out in the documents of the Direct Procurement - Science and Technology No. SGC- CDP-029-2021, I submit a proposal for the contracting process of the subject and make the following statements:

1. That this PROPOSAL and the contract that shall be concluded only commits the signatories hereto.
2. That no Entity or person other than the signatories has a commercial interest in this PROPOSAL or the contract derived from it.
3. That we are aware of the general and special information and other documents and accept the requirements contained therein.
4. That we know, accept and commit ourselves to observe all the MINIMUM TECHNICAL REQUIREMENTS established in Appendix No. 2 of this document, which shall be understood as the MINIMUM TECHNICAL PROPOSAL.
5. That, if we are awarded the contract, we undertake to sign the contract and carry out all the necessary procedures for its completion and legalization, within the deadlines indicated in the Terms and Conditions.
6. That we are not involved in any cause of inability and incompatibility of those indicated in the Law and the Colombian Political Constitution and we are not concerned in any of the events of special prohibitions to contract.

7. That in all actions derived from the stipulations of this document and the contract that is part of it, we will act with transparency and morality, within the framework of the Political Constitution and Colombian laws, in attention to the Government Program to Fight Corruption.
8. That the proponent whom I represent is fully aware and accepts the content of this contracting modality and its appendixes.
9. That the term of this proposal is ninety (90) calendar days.

Yours sincerely,

Name or Company Name of the PROPONENT _____

Name of Legal Representative _____

Business registration number _____

Address _____

City _____

Telephone _____

Fax _____

e-mail _____

SIGNATURE LEGAL REPRESENTATIVE _____

APPENDIX 2 – TECHNICAL SPECIFICATIONS

For AMS carbon-14 radiometric dating, a pretreatment is required to isolate the C14, standardized mechanical and / or chemical methods must be specified in the final laboratory report. For the pretreatment applied in the case of paleosol samples, it must be considered whether it is a sample of the top or the base of the same layer, in order to obtain the most representative age in each of them of the samples from the base of the paleosol, it is required to have the age of the most stable organic matter (stable fraction of organic matter), which represents the oldest age of the same.

In the case of samples from the top of the paleosol, it is required to know the youngest age, therefore, it is required that the particulate organic matter (POM, particulate organic matter fraction) that represents the unstable organic matter (Labile fraction of organic matter) be dated), for this shall be followed the protocols defined by the laboratory.

The samples analyzed by AMS must be converted into a form of solid graphite (carbon dioxide with subsequent graphitization under the presence of a metallic catalyst), once converted into graphite, the samples are pressed into a metallic disk which is then mounted on the measuring device. Mass spectrometer objects. The number of C atoms present in the sample and the relative proportion of C12 are counted and during the analysis the background detection is important (contribution of the activity of non-radioactive samples, which must be removed from the calculations).

For the radiometric dating of Ar / Ar, it is necessary to contract the services of dating samples by the Ar-Ar method, to determine the age of rocks and volcanic eruptions that occurred in Colombia. Offering laboratories are required to carry out the following stages of analysis.

Sample preparation: Once the samples have been received in the laboratory, they must be crushed, sieved, separated (magnetic and manual separation) and cleaned according to the protocols established by the Laboratory. The Laboratory must select the most appropriate material for dating (minerals or matrix with sufficient potassium content), or to discard those samples that are not viable due to the degree of alteration, contamination or because they do not contain material that can be dated.

Irradiation: Once the dateable material has been concentrated, the Laboratory must send the samples to irradiation in a nuclear reactor to generate ^{39}Ar from ^{39}K nuclear reactions. The reactor must have a properly defined and characterized irradiation position to carry out this type of analysis, in such a way that it is guaranteed that the neutron flux with which the sample is irradiated is adequate. Similarly, the laboratory must estimate the irradiation times based on the K content of the sample and the preliminarily estimated age. The samples must be sent with the standard materials (monitors of known age) in order to establish the factor J of the irradiation.

Argon Extraction: The Laboratory shall extract Ar by step-heating, preferably heating in an oven. In any case, the methodology followed should be reported to the SGC. Additionally, the laboratory must have a low-blank extraction line, made of metal and ultra-high vacuum.

Mass spectrometry: Given the needs of the service, the Laboratory is required to have a high-resolution, multi-collector noble gas mass spectrometer (MC-NG-MS), with Faraday detectors equipped with discrete dynode multipliers (ion counters), to provide a better signal.

Data reduction, age calculation and reporting: During the analytical session, argon isotopes must be corrected for interference reactions of isotopes derived from Ca, Cl and K, as well as correction for the presence of atmospheric ^{40}Ar . The Laboratory must perform the data reduction and age calculation according to the established protocol. In any case, the laboratory should deliver the data tables in Excel format with the results of the argon measurements, the ages (plateau age, total fusion, normal isochron and inverse isochron): the graphical outputs of the ages obtained (plateau diagram by step heating, K / Ca diagram and isotope correlation diagrams), and any other information that handle within standards.

It is worth highlighting to those interested in the selection process supported by this document, that the Entity establishes minimum quantities of 42 samples for the C-14 method and 13 samples for the Ar-Ar method, for illustration of proponents. However, the quantities of samples required by the SGC may increase because the selection process shall be awarded for the entire official budget, considering the lowest value offered.

OBLIGATIONS OF THE SERVICIO GEOLÓGICO COLOMBIANO

Radiometric dating of the Carbon-14 method AMS technique:

- a) Deliver the samples by certified mail to the Contractor.
- b) The samples delivered to the contractor shall be duly marked, labeled and packed. The samples to be analyzed shall be organized in separate boxes that will contain samples of paleosols, coals and logs, with ages estimated to be less than 50,000 years BP.
- c) Provide specific information on each of the samples sent on its location, stratigraphic location or relative age range and other details in accordance with the formats required by the contractor.
- d) Provide information required by the contractor in relation to the purpose of this contract.
- e) Make payments in accordance with the terms stipulated within the Contract and in those cases in which, after the pre-treatment samples were not suitable for dating: the SGC shall pay the value of the pre-treatment carried out in each case, according to the offer submitted by the contracting laboratory.
- f) The samples selected for ^{14}C dating shall be delivered in various groups as of the formalization of the contract.

Radiometric dating method Ar / Ar:

- a) Deliver the samples by certified mail to the contractor
- b) Deliver the samples to the Contractor duly marked, labelled an packaged.
- (d) Provide such information as the Contractor may require in relation to the subject matter of this contract.
- (e) Make payments in accordance with the terms of the Contract In those cases in which, after the preparation of samples, they were not suitable for dating, the SGC shall pay the value of the preparation carried out in each case, in accordance with the offer presented by the laboratory.

OBLIGATIONS OF THE CONTRACTOR:

Radiometric dating of the Carbon-14 method AMS technique:

- a) To comply with the purpose of this contract.
- b) To carry out the procedure established in the technical specifications.
- c) The proposing laboratory must specify in its results the cases in which the samples were not suitable for dating.
- d) Each time a group of samples is finished dating, the laboratory must deliver a Completion Report electronically addressed to the supervisor of the Colombian Geological Service (SGC) contract.
- e) Keep confidential all the information of the QMS to which the contractor has access in the development of the contract and may not use it or disclose it to third parties.
- f) In case of contingencies or unforeseen events, or that due to maintenance work on the equipment in the laboratory the process is stopped, the contractor must notify what happened within two (2) days to the SGC in order to assume the decisions that may arise.

Radiometric dating method Ar / Ar:

- a) To comply with the purpose of this Contract.
- b) To carry out the procedure established in the technical specifications.
- c) The Contractor shall specify in its results the cases in which the samples were not suitable for dating.
- d) Each time a group of samples is finished dating, the laboratory must deliver a Completion Report electronically addressed to the supervisor of the Colombian Geological Service (SGC) contract.
- e) Keep confidential all the information of the QMS to which the Contractor has access in the development of the contract and may not use it or disclose it to third parties
- f) In case of any contingency or unforeseen event, or if the maintenance of the equipment in the laboratory or the availability of the Nuclear Reactor results in a stoppage of the process, the contractor must notify the SERVICIO GEOLÓGICO COLOMBIANO within two (2) days in order to take the necessary decisions.

PRODUCTS TO BE DELIVERED BY THE CONTRACTOR:

Radiometric dating of the Carbon-14 method AMS technique:

A technical report, in digital format (PDF, .XLS or .DOC extensions), including the following:

1. Completion report of dating group of samples with the list of samples dated by AMS and the list of samples that could not be dated. The type of material must be indicated (paleosol, charcoal or logs). The report should include an appendix specifying: (a) Data of the equipment used: make, model, last date of preventive maintenance and data of the provider of this service. (b) Test method data used method detection limit, precision, trueness, working range, and measurement uncertainty. If any of these data is not available, attach the test method validation report.

2. Report of results, should include:

- a) The pretreatment processes applied if applicable, as well as it should be indicated if correction for isotopic fractionation was made using delta 13C (if possible).
- b) The radiocarbon age measured in years BP (1-sigma), the 3 C / 12 C ratio, the delta 13 C correction, the Conventional Radiocarbon age and the calibrated age if possible, indicating the curve and calibration program used. For cases where 2-sigma calibration must be carried out, present the radiocarbon age calibration curves to calendar years (radiocarbon age intercept with the calibration curve).
- c) Any other information that is established by laboratory standards.
- d) Subscribe the delivery certificates for each of the results received by the SGC.

Radiometric dating method Ar / Ar:

A report including the following information must be submitted for each batch of Ar/Ar data samples:

- 1) A technical report, in digital format (PDF, .XLS or .DOC extensions), containing the following:
 - a) Indicate the sample preparation processes, including processes of crushing, separation and washing of datable material.
The Laboratory must specify for each sample the analyzed material (mineral, total rock or matrix), and indicate whether or not the separation of minerals was successful. When a mineral is dated, indicate the size range of the analyzed crystals.
 - b) Specify the irradiation conditions of samples (nuclear reactor and position in which they were irradiated, irradiation time, irradiation monitors used). Additionally, it should include specifications on the calculation of the irradiation factor (J).
 - c) Indicate the conditions and routine of the argon extraction experiments (extraction temperature in celcius or, power in watts if heated by laser), as well as the conditions of the instrument.
 - d) Describe the specifications of the mass spectrometer (s) used for the analyzes. The date of last preventive maintenance and the name of the Entity in charge must be indicated.
 - e) Describe the method of data reduction and age calculations, including the value of the decay constant used to correct data. In case of obtaining straight isochrons, include the equations used to calculate the slopes.
 - f) Any other information that is established by the Laboratory standards.
 - g) Subscribe the delivery certificates of each of the results received by the SGC.
- 2) A summary table with general information on the sample, the resulting ages with a reported 2-sigma uncertainty, and a short interpretation of the results. The table should be provided in Excel format.
- 3) The Laboratory should provide for each sample the extended results table, with the results of argon measurements, the ages (plateau age, total fusion, normal isochronous and inverse isochronous), graphical outputs of the ages obtained (plateau diagram by step heating, K/Ca diagram and isotope correlation diagrams), and any other information that it handles within its standards. In case of obtaining straight isochrons, include the equations used for the calculation of the slopes. Data tables should be submitted in Excel format.



LEGAL REPRESENTATIVE

**APPENDIX 3 –
ECONOMIC PROPOSAL**

Here, we present an economic proposal within the present process, which aims to “Provide the services of dating samples by the Carbon-14 methods, AMS technique and the Ar-Ar method, to determine the age of rocks, soils and eruptions. volcanic events in Colombia, in accordance with the needs and specifications provided by the Colombian Geological Service. ”

ELEMENT	ROOF VALUE ESTABLISHED BY THE ENTITY INCLUDING ALL TAXES	PRE-TREATMENT OFFERED UNIT VALUE INCLUDING TAXES a)	OFFERED UNIT VALUE DATA INCLUDING TAXES b)	TOTAL UNIT VALUE OFFERED INCLUDING TAXES (a + b)
One radiometric dating by Carbon-14 method AMS Technique	USD \$685,62	USD\$	USD\$	USD\$

Note 1: In any case may the Offered Value exceed the Ceiling Value established by the Entity, it shall be a penalty for rejection of your offer.

Note 2: The Offered Values should include all costs, taxes, transportation and other expenses inherent to the satisfactory performance of the contract.

Note 3: The SGC will deduce local taxes of up to 39% of the total value, offers should consider this percentage on their proposals.

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ELEMENT	ROOF VALUE ESTABLISHED BY THE ENTITY INCLUDING ALL TAXES	PRE-TREATMENT OFFERED UNIT VALUE INCLUDING TAXES a)	OFFERED UNIT VALUE DATA INCLUDING TAXES b)	TOTAL UNIT VALUE OFFERED INCLUDING TAXES (a + b)
On radiometric dating by the Ar-Ar method	USD \$1.450,15	USD\$	USD\$	USD\$

Note 1: In any case may the Offered Value exceed the Ceiling Value established by the Entity, it shall be a penalty for rejection of your offer.

Note 2: The Offered Values should include all costs, taxes, transportation and other expenses inherent to the satisfactory performance of the contract.

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