Main activities carried out in the Philippines in the field of “Uranium and Thorium Resources Production Life Cycle”

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Planning

ATOMIC RESEARCH DIVISION

- Agricultural Research
- Biomedical Research
- Health Physics Research
- Applied Physics Research
- Chemistry Research
- Nuclear Materials Research

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- Nuclear Reactor Operations
- Engineering Services
- Irradiation Services
- Nuclear Analytical Techniques
- Isotope Techniques
- Radiation Protection Services

NUCLEAR REGULATORY DIVISION

- Regulations and Standards
- Development
- Inspection and Enforcement
- Licensing, Review and Evaluation
- Nuclear Safeguards and Security
- Radiological Impact Assessment

TECHNOLOGY DIFFUSION DIVISION

- International Cooperation
- Nuclear Training
- Information and Library Services
- Management Information System
- Business Development

FINANCE AND ADMINISTRATIVE DIVISION

- Budget
- Accounting
- Property and Procurement
- Human Resource Management and Records and Communication
- General Services
GENERAL FUNCTIONS

1. Conducts geo-nuclear studies on the search, recovery and processing of nuclear minerals/materials and other geochemically associated heavy elements.

2. Undertakes R&D on the application of radioactive materials in the mineral and metal industries.

3. Undertakes research using radioisotopes and nuclear techniques towards understanding the hydrological, hydrogeological, oceanographic and marine geological and geochemical processes such as sedimentation and siltation.

4. Carries out studies on the application of radioisotopes and nuclear techniques (e.g. gamma-ray spectrometer system) for mineral exploration.

5. Develops nuclear forensic analysis capabilities in support of nuclear material protection process so that in the event of an interdiction by Philippine law enforcement agencies involving illegal use or movement of radioactive material this capability may be used to develop and build a legal case against the perpetrators.

6. Conducts feasibility studies and pilot tests on the application of radioactive materials in the process industries.

7. Computerizes the compilation, recording, analysis and storage as well as map production of geo-nuclear data for public information dissemination.

8. Promotes collaborative researches with other national and local government including international agencies, universities and the private sector.
Under the project “Geochemical and Radiometric Characterization of the Thorium-Rare Earth Sand Deposits in San Vicente, Northwestern Palawan” preliminary evaluation conducted in the two prospective small areas indicated; 1) in Ombo area, an estimated total reserve of 750 tons of Th, 30,450 tons of REE and 80 tons of U contained in about 540,000 tons of beach sand with a respective average grade of 0.14% Th, 5.64% REE and 0.015% U, and 2) in Erawan area, an estimated total reserve of 2,200 tons of Th, 113,430 tons of REE and 150 tons U contained in 2,450,00 tons of beach sand with an average grade of 0.09% Th, 4.63% REE and 0.006% U, respectively.
Early this year, a field investigation was started under the Nuclear Research Foundation financially-assisted project entitled “Verification Survey for Radioactive Rare Earth Minerals in Northern Palawan”. Results showed high REE and Th content in stream heavy mineral samples in three rivers within the Municipality of Roxas and these are:
1. Arutayan (15.59%REE, 16.48%Th),
2. Minara (28.33%REE, 3.6%Th) and
3. Iraan (11.07%REE, 12.91%Th).
Mineralogical examination showed the presence of monazite in these stream heavy mineral samples.
Interestingly, this fieldwork discovered a radioactive hot spring (Makinit hot spring) located within Baranggay Barotuan in the town of El Nido. The highest gamma ray spectrometric measurements taken over soil near the pool of the Makinit hot spring were 399.1 ppm U and 1,482 ppm Th. While this is not uncommon in many countries, this is a first of its kind in the Philippines.
Currently exploring the possibility of extracting uranium, REE and other valuable minerals from phosphoric acid.

About one (1) million metric tons of phosphate raw ore per year is being processed by the Philippine Phosphate Fertilizer Corp. (Philphos) for the production of fertilizers.

Goodwill visit at Philphos plant in Isabel, Leyte resulted positively for possible project collaboration. Also conducted preliminary characterization of different sample types and results showed:

Phosphate raw ore gave 58.7-68.7 ppm U using a portable RS-230 Super Spec gamma ray spectrometer with 2x2” BGO detector. Fluorimetric analysis gave 62.9–68.3 ppm U. Other sources of phosphate ore sent by Philphos gave 57.9–93.9 ppm U by fluorimetric analysis. ICP – MS analysis of WPA from Egypt and Peru phosrocks showed:

- U = 80.93 ppm
- Th = 0.94 ppm
- Y = 10.66 ppm
- Ce = 3.22 ppm
- V = 123.8 ppm
- Cr = 83.7 ppm

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- Th = 1.71 ppm
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A National Concept Project PHI2012005 entitled “Extraction of U, REE and Other Useful Commodities from Wet Phosphoric Acid (UxP)” was submitted and positively accepted under the IAEA TC Project CY2014-2015.

A project proposal entitled “Comprehensive extraction of uranium, REE and other valuable resources from wet phosphoric acid: Phase I” was submitted to the National Research Council of the Philippines for financial assistance to support the local funding requirement of the UxP project and positively accepted to start in CY2015.
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<th>Main activities carried out at the country 2012-2013</th>
<th>Major Achievements January 2012-June 2013 within the INT/2/015 Project</th>
<th>Major Constraints and Lessons Learned</th>
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| • Geochemical and Radiometric Characterization of the Thorium-Rare Earth Sand Deposits in San Vicente, Northwestern Palawan | • Preliminary estimation  
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• Fieldwork conducted pinpointed three rivers having high REE and Th content in stream heavy mineral and these are;  
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  2. Minara (28.33%REE, 3.6%Th), and  
  3. Iraan (11.07%REE, 12.91%Th).  
  Preliminary mineralogical examination showed the presence of monazite in these stream heavy mineral samples.  
  Discovered a radioactive hot spring (Makinit hot spring), a first in the country.  
• Goodwill visit at Philphos plant in Isabel, Leyte resulted positively for possible project collaboration and conducted preliminary characterization of different sample types.  
  A National Concept Project PHI2012005 entitled "Extraction of U, REE and Other Valuable Resources from Wet Phosphoric Acid (UxP)" was submitted and positively accepted under the IAEA TC Project CY2014-15.  
  A project proposal entitled “Comprehensive extraction of uranium, REE and other valuable resources from wet phosphoric acid: Phase I” was submitted to the National Research Council of the Philippines for financial assistance to support the local funding requirement of the UxP project and positively accepted to start in CY2015. | 1. Growing anti-mining sentiment.  
2. Funding.  
3. Antiquated equipment.  
4. Aging trained and knowledgeable people in this field with none to very few young recruits. | 1. Continued support from IAEA such as possible continuation of INT/2/015 project beyond 2013 or in the form of coordinated research projects.  
2. Widened researches, development, capacity building and opportunities in the area of comprehensive extraction.  
3. Increased awareness and understanding on the role of “social licensing” in the mining and extractive industries.  
4. Final approval of the Philippines’ UxP project proposal by IAEA with the necessary equipment. |
October 2012 in Lisbon, Portugal
The REE – Thorium mineralized in two beach areas in northern Palawan still need further exploration work and evaluation as to their economic viability.
Classification – E3.2 F3 G4

Preliminary evaluation conducted in these two areas indicated; 1) in Ombo area, an estimated total reserve of 750 tons of Th, 30,450 tons of REE and 80 tons of U contained in about 540,000 tons of beach sand with a respective average grade of 0.14% Th, 5.64% REE and 0.015% U, and 2) in Erawan area, an estimated total reserve of 2,200 tons of Th, 113,430 tons of REE and 150 tons U contained in 2,450,00 tons of beach sand with an average grade of 0.09% Th, 4.63% REE and 0.006% U, respectively.
Classification – E3.2 F3.1 G3

According to the UNFC ECE ENERGY GE3 2013 dated 28 March 3013 - F3.1: where site-specific geological studies and exploration activities have identified the potential for an individual deposit with sufficient confidence to warrant drilling or testing that is designed to confirm the existence of that deposit in such form, quality and quantity that the feasibility of extraction can be evaluated.

Classification – E3.2 F3 G4
Currently exploring the possibility of extracting uranium, REE and other valuable minerals from phosphoric acid.

About one (1) million metric tons of phosphate raw ore per year is being processed by the Philippine Phosphate Fertilizer Corp. (Philphos) for the production of fertilizers.

According to the UNFC ECE ENERGY GE3 2013 dated 28 March 2013 - F4.2: the technology necessary to recover some or all of the these quantities is currently being researched, but no successful pilot studies have yet been completed.

Classification – E3.2 F4.2 G4

Phosphate raw ore gave 58.7 – 68.7 ppm U using a portable RS-230 Super Spec gamma ray spectrometer with 2x2” BGO detector.
Fluorimetric analysis gave 62.9 – 68.3 ppm U.
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October 2012 in Lisbon, Portugal

The indicated reserve of 200 tons U$_3$O$_8$ in the Larap area, studies had shown that U can only be economically mined as a by-product of the primary Fe-Cu-Mo deposit. However, there are no indications that the Bessemer Fe-Cu-Mo deposit of the defunct Philippine Iron Mines will be operated.

Classification – E3.2 F2.3 G3

Classification – E3.2 F2.3 G2
Comment No. 2
Perhaps, the E fundamental criteria should be economic, political and social viability. In my country, the local government can create laws that affect their communities. A classic example is a considered world class huge porphyry Cu-Au discovery whose development has been stopped due to a law passed by the local government banning open pit mining within their area. Porphyry deposits are known to be economically mined via the open pit mining method. This is a very promising economic venture stalled by politics. And, this can likewise happen to any mining area, including uranium and thorium deposits.

AND NOW THE POLITICAL ISSUE

South Cotabato governor stands ground on open-pit mining ban
Inquirer Mindanao
7:08 pm | Tuesday, July 10th, 2012
GENERAL SANTOS CITY, Philippines—South Cotabato Governor Arthur Pingoy said Tuesday he and other provincial officials were not bothered by the mining policy enunciated by President Benigno Aquino III in a new executive order.
South Cotabato has an ordinance banning open-pit and other mining practices considered destructive.
President Aquino’s new executive order bans mining only in the Lake Sebu area but allows it in the municipality of Tampakan, where Xstrata’s Sagittarius Mines Inc. has been trying to operate an open-pit mine.
The ban is the main reason the Environmental Management Bureau continues to deny SMI’s application for an environmental compliance certificate (ECC) that would allow it to proceed with its planned operations.

Tampakan mayor backs mining firm’s bid for ECC reconsideration
KORONADAL CITY (MindaNews) – Beleaguered foreign-backed Sagittarius Mines, Inc. has gained the support of the mayor of Tampakan in South Cotabato for the reconsideration of its rejected application for an environmental compliance certificate (ECC).
Escobillo said that “several sectors in Tampakan wanted a reconsideration of the DENR decision” so that Sagittarius Mines can proceed to production stage.
Good and bad news in Tampakan mine's ECC
02/25/2013

The good news is that the Philippine government finally gave an environmental clearance to Xstrata’s $5.9 billion mining project on southern Mindanao island. The bad news is that the approval is so riddled with political considerations that the project will be fortunate to start operations in 2019.

The Tampakan mine project is being run by Sagittarius Mining, a unit owned by Xstrata, one of the world’s biggest and diversified mining outfits. The 9,605-hectare project is expected to produce an average haul of 375,000 metric tons of copper and 360,000 ounces of gold per year.

The company has already delayed the start of operations to 2019 because of the political cost of doing business in the Philippines and a government under Benigno Aquino III which has been notably feckless toward its position on mining.

Environment Secretary Ramon Paje was thinking along political lines when he said the clearance could be cancelled if the mining company failed to meet “certain conditions”.

The government said Sagittarius Mining, which is running the Tampakan project, “could only proceed with the implementation of the project after submitting all other necessary government permits and clearances to the EMB (Environmental Management Bureau), particularly those involving indigenous peoples, the agriculture and agrarian reform departments, and local government units.”

The mining company is also ordered “to set up a Multipartite Monitoring Team (MMT) and submit an Environmental Protection and Enhancement Program (EPEP) that would integrate a final mine rehabilitation and decommissioning plan for when the project is terminated or completed.”

The government also said the mine should “conform to the provisions involving toxic and solid wastes of several laws on clean air and water and mining” and other provisions on waste disposal and providing communities with good water supplies.

The only reasons for these provisions is really political by providing the government cover from anti-mining activists. When you throw in the fact that elections are scheduled for May 2013, then you can understand why all the hot air is being blown up by Manila for voters there.

After the May 2013 elections, the Governor lost his seat while the Mayor of Tampakan remained in office.

2016 – National and local elections, President > down to least local official
2019 – National and local elections, Senator > down to local officials

ELECTIONS ARE HELD EVERY 3 YEARS!!!
THANK YOU MUCHAS GRACIAS

Tarsier - smallest primate

IT’S MORE FUN IN THE PHILIPPINES