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**ΕΛΛΑΣ , ΕΝΑΣ ΠΑΡΑΔΕΙΣΟΣ ΓΙΑ ΓΕΩΕΠΙΣΤΗΜΟΝΕΣ
ΚΑΙ ΣΥΛΛΕΚΤΕΣ ΟΡΥΚΤΩΝ
HELLAS , A PARADISE FOR GEOSCIENTISTS AND
MINERAL COLLECTORS**

Τα ΟΡΥΚΤΟΛΟΓΙΚΑ NEA-NEWS ON MINERALS στην 42η Έκθεση Ορυκτών στο Sainte-Marie-aux-Mines στην Αλσατία της Γαλλίας.

Μετά από ένα προγραμματισμό η ιστορική ομάδα των ΟΡΥΚΤΟΛΟΓΙΚΩΝ ΝΕΩΝ-NEWS ON MINERALS αποτελούμενη από τον Δημήτρη Γ. Μηνатиδή , Αλεξάνδρα Γ. Μηνατίδου , Ευαγγελία Γ. Μηνατίδου , Πέτρο Ε. Σολομωνίδη και το HYUNDAI MATRIX 1.6 κυβ ξεκίνησε στις 21 Ιουνίου 2005 , ημέρα Τρίτη και ώρα 11.30 π. μ. από τον Πειραιά για την Αλσατία της Γαλλίας ώστε να επισκεφθούν την Έκθεση Ορυκτών στο Sainte-Marie aux Mines αλλά και να εξετασθεί από κοντά η Γεωλογία της ευρύτερης περιοχής της Αλσατίας στην οποία πραγματοποιήθηκε το πρώτο Ευρωπαϊκό Πρόγραμμα έρευνας και αξιοποίησης Γεωθερμικού Δυναμικού μεγάλου βάθους με σκοπό την παραγωγή ηλεκτρικής ενέργειας . Μετά μία στάση στην Παραλία στα Σελιανίτικα στη Βόρεια Πελοπόννησο, για φαγητό , φθάσαμε στην Πάτρα και στις 6 μ.μ. αναχωρήσαμε με το πλοίο BLUE HORIZON της Εταιρείας BLUE STAR FERRIES για το Μπάρι της Ιταλίας. Μετά από ένα άνετο ταξίδι με ένα όμορφο πλοίο το οποίο προσφέρει όλες τις ανέσεις και άψογη παροχή υπηρεσιών , φθάσαμε στο Μπάρι της Ιταλίας την επόμενη ημέρα 22 Ιουνίου 2005 στις 9 π.μ. , και τελικά μετά την αποβίβαση και κάποιες καθυστερήσεις μέχρις ότου εισέλθουμε στον ιταλικό αυτοκινητόδρομο , ξεκινήσαμε οδικώς με προορισμό τον Άγιο Ιππόλυτο της Αλσατίας ,όπου ήταν και το Ξενοδοχείο μας Aux Ducs de Lorraine . Διασχίζοντας οδικώς την Ιταλία ,φθάσαμε στο Μιλάνο και από εκεί μέσω Ελβετίας φθάσαμε στην Γαλλία , στον Άγιο Ιππόλυτο της Αλσατίας στις 1.30 π. μ. της 23ης Ιουνίου 2005. Το Ξενοδοχείο Aux Ducs de Lorraines , ένα πολύ όμορφο και άνετο Ξενοδοχείο ανάμεσα στους αμπελώνες της Αλσατίας , το προσωπικό του οποίου ήταν άψογο όπως και η παροχή υπηρεσιών. Το πρωί της ίδιας ημέρας (Πέμπτη 23 Ιουνίου 2005) επισκεφθήκαμε την έκθεση ελεύθερα με την άδεια του διοργανωτή κ. Michel Schwab τον οποίο και ευχαριστούμε για την ευγενική του συνεργασία ,όταν τον ενημερώσαμε ότι η ομάδα του περιοδικού μας θα επισκεφθεί την Έκθεση στο Sainte Marie-aux-Mines.

Πριν από την περιγραφή της Εκθέσεως θα πρέπει να ομολογήσουμε ότι το τοπίο της Αλσατίας είναι πολύ όμορφο και τούτο έχει σημασία διότι προερχόμαστε από μία πολύ μαγευτική Χώρα , όπως είναι η Ελλάδα και σπάνια εντυπωσιαζόμαστε από άλλα τοπία σε άλλες Χώρες .Η Αλσατία είναι καταπράσινη βρίσκεται στα Γαλλογερμανικά σύνορα , είναι γνωστή διότι εκεί παράγονται μερικά από τα καλύτερα Γαλλικά κρασιά και διότι στην περιοχή Soultz-sous-Forêts ολοκληρώθηκε το Ευρωπαϊκό Πρόγραμμα Αξιοποίησης Γεωθερμικού Δυναμικού Μεγάλου Βάθους για την παραγωγή ηλεκτρικής ενέργειας , το γνωστό ως HDR (από τα αρχικά των αγγλικών λέξεων Hot Dry Rock). Έτσι με το ταξίδι αυτό τα ΟΡΥΚΤΟΛΟΓΙΚΑ NEA-NEWS ON MINERALS συνδύασαν την Έκθεση Ορυκτών με την Γεωθερμία στην ευρύτερη Γεωλογική ζώνη της Αλσατίας.

Θα πρέπει επίσης να αναφέρουμε την μεγάλη διευκόλυνση με το κοινό νόμισμα ΕΥΡΩ στην Ευρωπαϊκή Ένωση καθώς και την ελευθερία κινήσεων στην Ενωμένη Ευρώπη.

Η έκθεση στο Sainte Marie-aux-mines γίνεται σε δύο υπαίθριους εκθεσιακούς χώρους , ένα μεγαλύτερο και ένα δεύτερο μικρότερο. Αρκετοί εκθέτες από πολλές περιοχές της Γης και όμορφα ορυκτά για κάθε τσέπη. Υπήρχαν πολλοί κρύσταλλοι ακουαμαρίνα από το Πακιστάν και το Αφγανιστάν , αμμωνίτες από το Μαρόκκο και την Μαδαγασκάρη , Πράσινοι φθορίτες από την Κίνα , αλλά και διάφορα σπάνια ορυκτά ,όπως καβανσίτες από την Ινδία (ελάχιστα δείγματα στην Έκθεση ,επιβεβαιώνοντας την σπανιότητα του ορυκτού), σμαράγδια από την Κολομβία και την Βραζιλία , ενώ εντυπωσιακοί ήταν ευμεγέθεις κρύσταλλοι κυανίτη από τις Άλπεις . Μεγάλα δείγματα Ροδονίτη , "χρυσάνθεμο" από την Κίνα και άλλα. Θα πρέπει να επισημάνουμε ότι από ότι ακούσαμε από διάφορους εκθέτες ,ντόπιους και συλλέκτες την χρονιά αυτή η προσέλευση του κόσμου ήταν μικρότερη σε σχέση με άλλες χρονιές και φαίνεται ότι τούτο είναι ενδεικτικό μίας γενικά δύσκολης από οικονομικής απόψεως εποχής για όλο τον κόσμο. Ο χώρος στο τεύχος αυτό είναι πολύ μικρός για να περιγραφούν με λεπτομέρεια όλα όσα είδαμε στην έκθεση και επειδή μία φωτογραφία ίσον χίλιες λέξεις σας παραπέμπουμε στην φωτοϊστορία.

Δημήτρης Γ. Μηνατίδης

ORYKTOLOGIKA NEA-NEWS ON MINERALS in 42th Sainte-Marie aux mines Mineral show in Alsace , France.

After the timely planning the historical team of ORYKTOLOGIKA NEA-NEWS ON MINERALS Dimitris G. Minatidis , Alexandra G. Minatidou , Evangelia G. Minatidou and Petros E. Solomonidis on board the HYUNDAI MATRIX 1.6 c.c departed on 21st June 2005, Tuesday at 11.30 a.m. from Piraeus to Alsace , France in order to visit the Mineral show in Sainte-Marie aux Mines and see from close the general Geology of the Alsace terrain where the first European Project on Hot Dry Rocks took place , a project for deep heat mining in order to produce electricity from clean geothermal energy. After a stop for lunch in Selianitika area in Northern Peloponesos ,we arrived in Patra and we left Patra at 6 p.m. on board BLUE HORIZON ship of BLUE STAR FERRIES with destination Bari in Italy. After a nice trip with a beautiful ship providing all comforts and unexceptionable services we arrived at Bari ,Italy , the next day 22 June 2005 at 9 a.m. and finally after disembarkation and some delays until we enter the italian highway, we started driving with destination St. Hippolyte in Alsace. Driving through Helvetia and France, we arrived in St. Hippolyte at 1.30 a.m. of 23rd June 2005. Our Hotel , Aux Ducs de Lorraine can be seen in photograph . A beautiful and comfortable Hotel surrounded by vineyards of Alsace with unexceptionable personel and service. The morning of same day we entered free in the show due to professional invitation from Mr. Michel Schwab , whom we thank very much from early stages of planning when we kept him informed on our visit.

Before the description of the show we must confess that Alsace is a beautiful landscape and this is important taking into consideration that we live in a beautiful Country , Hellas (=Greece) and rarely we are impressed on other landscapes. Alsace , close to French -German borders is open air landscape full of woods and vineyards ,while picturesque villages are scattered throughout the terrain. Alsace is known for its excellent wines and the integration of the first European project on research and development of deep site geothermal potential for production of electricity in the area of Soultz-sous-Forêts . So we combined the mineral show trip with a look in the general geological terrain of Alsace . A similar project on Research and Development of deep sited Geothermal potential for production of electricity - in the general area centered in Hellas - analogous to that in Alsace will turn to be very profitable from clean alternative point of view.

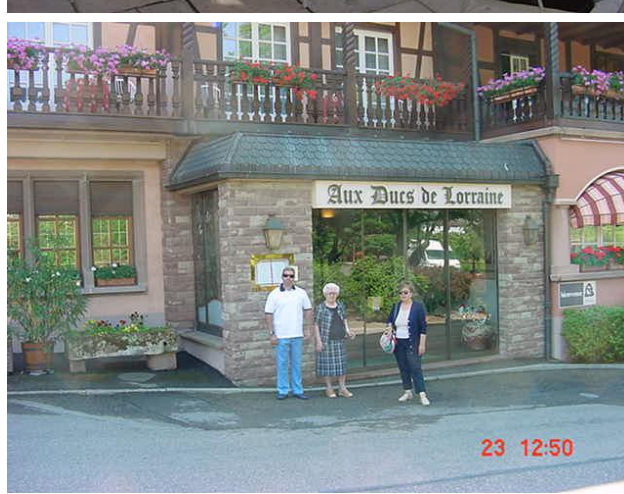
It is worth to mention the flexibility in having common monetary unit within the European Union ,the EURO, as well as the freedom to move inside the European Union as the feeling in being within one and the same Country was obvious in every move.

The Sainte Marie-aux-mines show takes place within the village in two show-grounds .There were participants from many parts of the world and nice specimens for every "pocket". We saw many aquamarine specimens of various qualities from Pakistan and Afghanistan ,fossil ammonites from Morocco and Madagascar , green fluorites from China , emeralds from Colombia and Brazil , rare beautiful cavansite specimens from India (not many pieces in the show , confirming thus the rarity of this mineral) , impressive kyanite specimens from Alps , huge polished rhodonite specimens and "chrysanthemum" specimens from China to mention some of the specimens we saw.

ORYKTOLOGIKA NEA-NEWS ON MINERALS has been progressively be a link between European Collectors and Collectors from all over the World with Collectors from Hellas and also will be willing to bring close our readers with major Mineral Gem and Fossil Shows.

The space in this periodical is not enough to describe what we saw in detail and as one photograph equals to one thousand words , we leave you to enjoy our trip through the photographs from our trip from Greece to France and the show .

Dimitris G. Minatidis



- 1: Departing from Piraeus
- 2: Lunch in Selianitika
- 3 : Lovely sea in Selianitika
- 4.Coffee time in Selianitika.
- 5 and 6 : Hotel AUX DUCS DE LORRAINE in ALSACE
- 7: Alsace , St. Hippolyte ,General view from the room . In the background ,The Castle



Photographs 8 , 9 and 10 : Arriving in the show

11 : Alexandra and Evangelia Minatidou examining gem rough and gemstone jewellery at a German stand.

12 and 13 : Having lunch in the TAVERNE DU MINEUR across the big showground.

14 : Petros Solomonidis , Alexandra and Evangelia Minatidou in the front of one of the best wine shops in ALSACE.



15: A general view of the French show .

16 : Alexandra G. Minatidou by the window of the Taverne du Mineur.

17: Superb green amazonite + smoky quartz crystal cluster from Colorado ,USA

18: Magnificent specimens of native Gold on quartz

19. Fantastic Rhodochrosite specimens

20 Giant Aquamarina sea-green crystals from Pakistan and Afghanistan.

21 In the front of one of the best wine shops in Alsace close St. Hippolyte



22 and 23 -Huge “Chrysanthemum” stones , Rhodonite , Jade and other stones weighing over 30 kilos in wooden base from China.

24 -Amethyst Geodes and amethyst flats from Brazil

25 -Superb emerald crystals either as single crystals on in rock matrix from Colombia , South America

26-Various gem crafts made of Malachite from Congo ,Africa and Lapis Lazuli

27-Alexandra G. Minatidou and Evangelhia G. Minatidou in Ribauvillé, France



Ο Δρόμος της επιστροφής - On the way back home to Piraeus , Hellas

28 : Alexandra G. Minatidou , Evangelia Minatidou and Petros Solomonidis on the bridge over the main river in Basel , Helvetia.

29 Various Quartz specimens –any size , any type – along the road at St. Gottard pass in Helvetia

30 Alexandra Minatidou and Evangelia Minatidou in Republic of San Marino , an independent State within Italy close to Rimini.

31 Dimitris G. Minatidis ,the Editor of ORYKTOLOGIKA NEA-NEWS ON MINERALS and GeMin manager along with his mother Alexandra G. Minatidou and his cousin Petros Solomonidis on board BLUE HORIZON ship heading back from Bari ,Italy to Patra Port ,Peloponnesus ,Hellas

32 BLUE HORIZON in Patra Port ,one of the most beautiful tourist destinations in Southern Hellas

33. On the way back. In the background one can see the newly built bridge uniting Peloponnesus with Sterea Hellas extending over the ocean.

As it was explained before, apart from the mineral show in Ste. Marie aux Mines ,Alsace was the Geological terrain where the first European effort (Project) was carried out for Deep Heat Mining in order to produce electricity. A same project took place in the same area in French-Swiss borders as can be seen below (Information provided to us by Dr François-D. Vuataz Director of the CREGE, Centre of geothermal research, Neuchatel, c/o CHYN/Univ. of Neuchâtel 11, Rue Emile-Argand ,CP 2,CH - 2007 Neuchâtel, Switzerland ,Direct phone: +41 32 718 26 92 E-mail: francois.vuataz@crege.ch Secretary.: +41 32 718 26 02, Fax: +41 32 718 26 03 whom we thank very much).

DEEP HEAT MINING: Development of a cogeneration power plant from an enhanced geothermal system in Basel, Switzerland.

Markus O. Haring, Geothermal Explorers Ltd

Key Words

enhanced geothermal system (EGS), heat mining, pilot plant, cogeneration, district heating, Rhine Graben, seismic monitoring, induced seismicity

Abstract

In Basel, Switzerland a geothermal cogeneration pilot plant is being developed. The area at the south-eastern margin is characterised by an increased heat flow and is known as a seismically active area. A 2.7 km deep exploration well through the Rhine Graben sequence into the granitic host rock has confirmed a temperature gradient of 4.0 °C/100m. The well has confirmed a stress field that is favourable for creating an enhanced geothermal reservoir by hydraulic fracturing. It is intended to drill one injection and two production wells to produce 3 MW electric power and 20 MW thermal power for the local district heating grid from an enhanced reservoir at five kilometres depth. The pilot plant should demonstrate that geothermal power production from enhanced geothermal reservoirs is a viable option of developing a sustainable and environmentally benign resource outside known geothermal fields for the future global energy demand.

Introduction

All global energy demand scenarios show that in the second half of this century additional energy resource have to be available. By analysing all sustainable energy resources it becomes clear that only geothermal energy is capable of producing baseload energy in a reliable manner without additional storage. The conditions new energy resources have to fulfill are high: They must be reliable, sustainable, environmentally benign and first of all economic. We are convinced that geothermal energy is so abundant and ubiquitous, that a great effort is justified to make the resource available to a larger market. Engineered or enhanced geothermal reservoirs are one promising method to tap this resource outside classical geothermal fields.

Switzerland is not only a country with great sceneries, fabulous chocolate and secretive banks but also a country devoid of fossil resources. Power is generated by hydropower and nuclear plants. In the search for alternative resources it has been recognised that wind and solar are insufficient to provide a reliable power supply beyond the age of fossil fuels. Switzerland is also a densely populated country and land prices are high. New power plants should require little space and be as inconspicuous as possible. The most striking part of geothermal plants are the cooling units. Water is abundant in Switzerland and cooling of thermal power plants can be achieved in general with running water from large rivers like the Rhine. Hence it is understandable that research into geothermal technologies is widely supported by power producers, the public and the government. The purpose of this paper is to demonstrate that it is possible to develop geothermal power plants in areas outside known geothermal fields, when local geological characteristics, infrastructural advantages and commercial requirements are adressed and dealt with in an integrated approach.

Pilot Plant

In Basel, Switzerland a pilot plant is being developed to use energy won by EGS technology for co-generation of electrical power and heat for local district heating. The core of the project called DEEP HEAT MINING BASEL, is a well triplet into hot granitic basement at a depth of 5000 metres (Figure 1). Two additional monitoring wells into the top of the basement rock will be equipped with multiple seismic receiver arrays. They will record the frac induced seismic signals to map the seismic active domain of the stimulated reservoir volume. Reservoir temperature is expected to be 200°C. Water circulation of 100 l/s through one injection well and two production wells will result in gross 30 MW thermal power at well heads. It has not yet been decided what conversion cycle will be used for electric power production. The plant is located in an industrial area of Basel. The waste incineration of the municipal water purification plant provides an additional heat source. In combination with this heat source and an additional gas turbine, a combined co-generation plant can produce annually up to 108 GWh electric power and 39 GWh of thermal power to the district heating grid.

Geology

Basel is situated at the south-eastern end of the Rhine Graben (Figure 2), a failed rift feature cutting from north-east to south-west through central western Europe. This part of Europe is characterised by strike-slip faulting dominated by compressive forces of the alpine collision (Figure 3) (Reinecker et al., 2003).

Rifting of the Rhine Graben during the Oligocene has resulted in a thinned crust. Refraction seismic data indicate buckling of the Moho with a minimum of 24 km below surface at the centre of the Southern Rhine Graben (Bonjer, 1997). Strike slip faulting along the graben boundary fault system led to vertical hydraulic circulation in various locations. Geothermal maps of the area are not very detailed and are based on a restricted number of shallow observations. They show however throughout the region an increased heat flow of at least 100 mW/m² with up to 130 mW/m² (Medici and Rybach, 1995).

Basel is not only situated at the south eastern end of the Rhine Graben but also at the northern front of the Jura mountains, the outermost expression and youngest part of the alpine fold belt. The peculiar coincidence of north-northwest trending compression and west-northwest extension creates a seismically active environment. Historically the worst earthquake occurred in 1356 with an estimated magnitude of 6.5 to 7 (Weidmann, 2002). It destroyed the city of Basel and many medieval castles in the wider area. Hypocentres are characteristically at a depth of around 15 to 20 km, a depth at which the main boundary faults are believed to sole out. Although depth allocation of the regional seismic monitoring array is not very precise, it appears that substantial seismic events may occur as shallow as 5 km (Figure 4).

The plant lies within this seismic active area (Deichmann, 2003). It is therefore indicated to record and understand the natural seismic activity as accurately as possible, prior to stimulation of a deep reservoir volume, characteristically accompanied with induced seismicity. The first exploration well, Otterbach 2 drilled in 2001 into granitic basement at 2650 metres to a total depth of 2755 metres. The well is planned to become a monitoring well equipped with a seismic cable. The cable with a total length of 3'000 metres consists of twelve mems sensors installed into three tetrahedral (four component) sondes, twelve geophones likewise installed into three tetrahedral sondes and a temperature sonde at the bottom. The sondes are placed at 10 metre intervals from the bottom upwards. Deployment of the cable is planned in June 2004. The purpose of the monitoring is to detect and locate the induced seismic signals generated by hydraulic fracs as well as natural regional seismic events.

A shallow seismic survey was shot in 2002 along the Rhine river with airgun and streamers. The survey was part of the scientific EUCOR-URGENT programme with the focus on seismic hazards and neotectonics in the Upper Rhine Graben. The seismic line through the city of Basel cuts across the main boundary fault displaying a vertical throw of more than 2500 metres. The Otterbach exploration well, drilled in 2001 is located on the downthrown side, about two kilometres east of the main boundary fault. It is the first well in this area penetrating the entire sedimentary sequence down to basement (Figure 5).

The temperature gradient is 4 °C/ 100 m (Figure 6). The sedimentary sequence consists of Tertiary clastics, Mesozoic carbonates, shales and evaporites and Permian sandstones. Heat flow and heat production measurements in the outcropping granites on the flanks indicate that the same gradient is likely to persist down to the target depth.

Borehole deformation logging with acoustic and electric borehole televiewer tools shows induced fractures pointing predominantly in a NNW direction and induced borehole breakouts in the perpendicular direction. This trend is completely in line with the regional stress field (Plenefisch and Bonjer, 1997). No pressure tests were performed. The well was drilled with a balanced mud system. The fact that induced fractures are observed already in a balanced well, indicates that fracking in the granite will not require large hydraulic pressures.

The EGS project of the European Community at Soultz-sous-forêts, 150 kilometres north, situated in the Rhine Graben too, experienced similar conditions. In an injection test over a period of 126 days with flow rates around 25 l/s through a reservoir at 3.5 km depth, injection pressures averaged 30 bars (Baumgärtner et al., 1998)

Project plan

The next well is planned to the targeted reservoir depth at 5000 metres. It will be drilled on a industrial site in the city of Basel. It is intended to deviate the well at a depth of 3000 metres to the east with an angle of 15° in order to improve chances to penetrate open fractures associated with the main boundary fault system.

When the main targets of a minimal temperature of 190°C and a fractured reservoir rock is found in a favourable stress field, the well will be suspended. A second monitoring well two kilometres to the east will then be drilled and equipped with a similar seismic array like the Otterbach well. The two extended seismic arrays provide a series of locally independent receiver points sufficient to compute the location of a seismic source with the required accuracy. Subsequently injection tests will be conducted in the deep well in order to develop an enhanced reservoir. The final two wells will be drilled deviated from the same location. The conversion cycle for power production will be selected upon proof of circulation.

The exploration phase (proof of circulation) should be completed within two years. Beside the technical challenges to stimulate a fracture system along a fault system in a seismically active area, other environmental challenges, like drilling noise mitigation in a city, have to be met.

The project is carried by a partnership of regional utility companies and subsidised by the local government. All investors are aware of the pilot character of the project, but in view of the chances to gain a leading know-how in harvesting an old but hitherto unreachable resource is worth the well known exploration risks.

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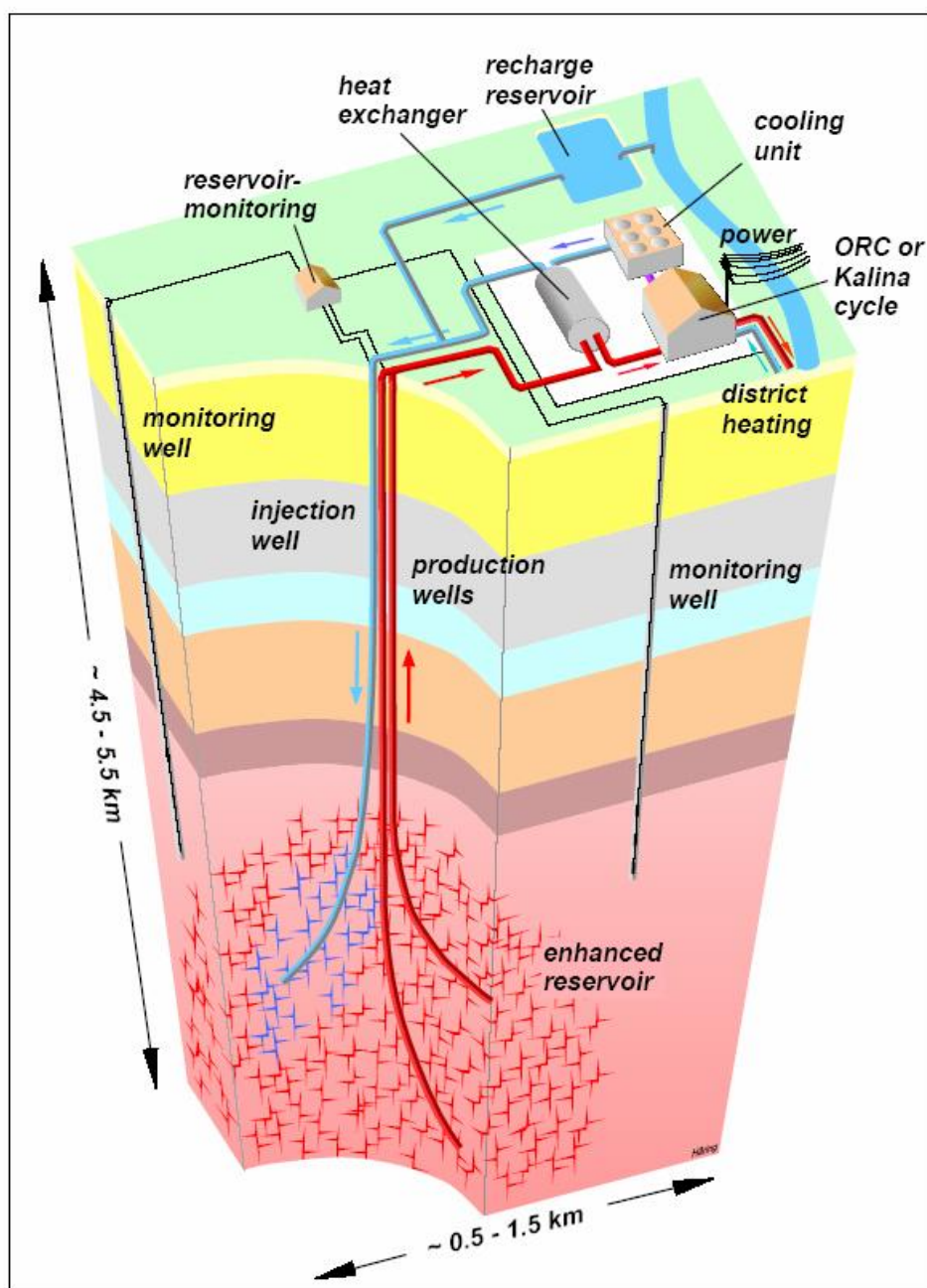


Figure 1: Concept of EGS cogeneration pilot plant in Basel, Switzerland

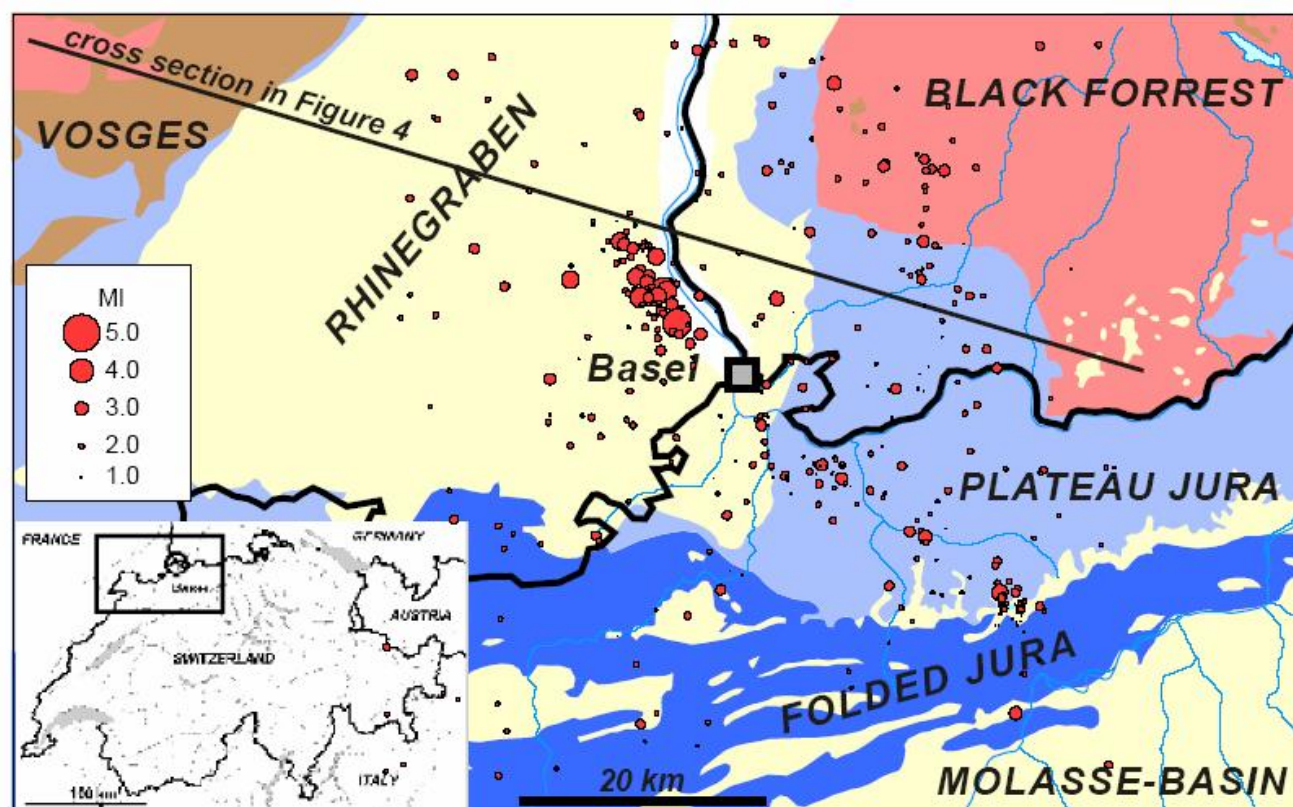


Figure 2: Location of the EGS pilot plant with regional geological setting. Seismicity 1975 - 2002 (source Swiss Seismological Service, Deichmann 2004)

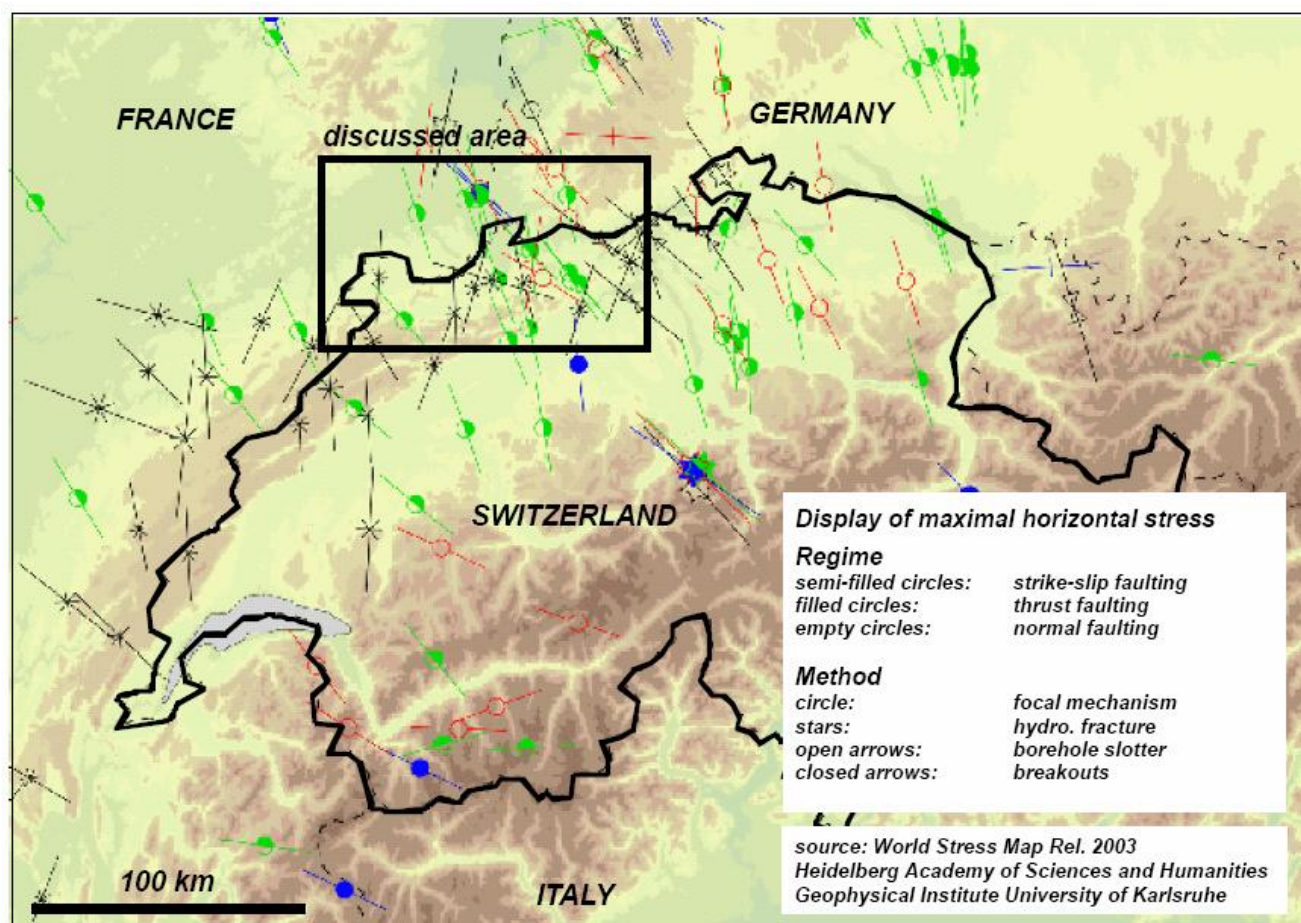


Figure 3: Stress field Switzerland showing predominant strike-slip faulting regime in the Basel area.

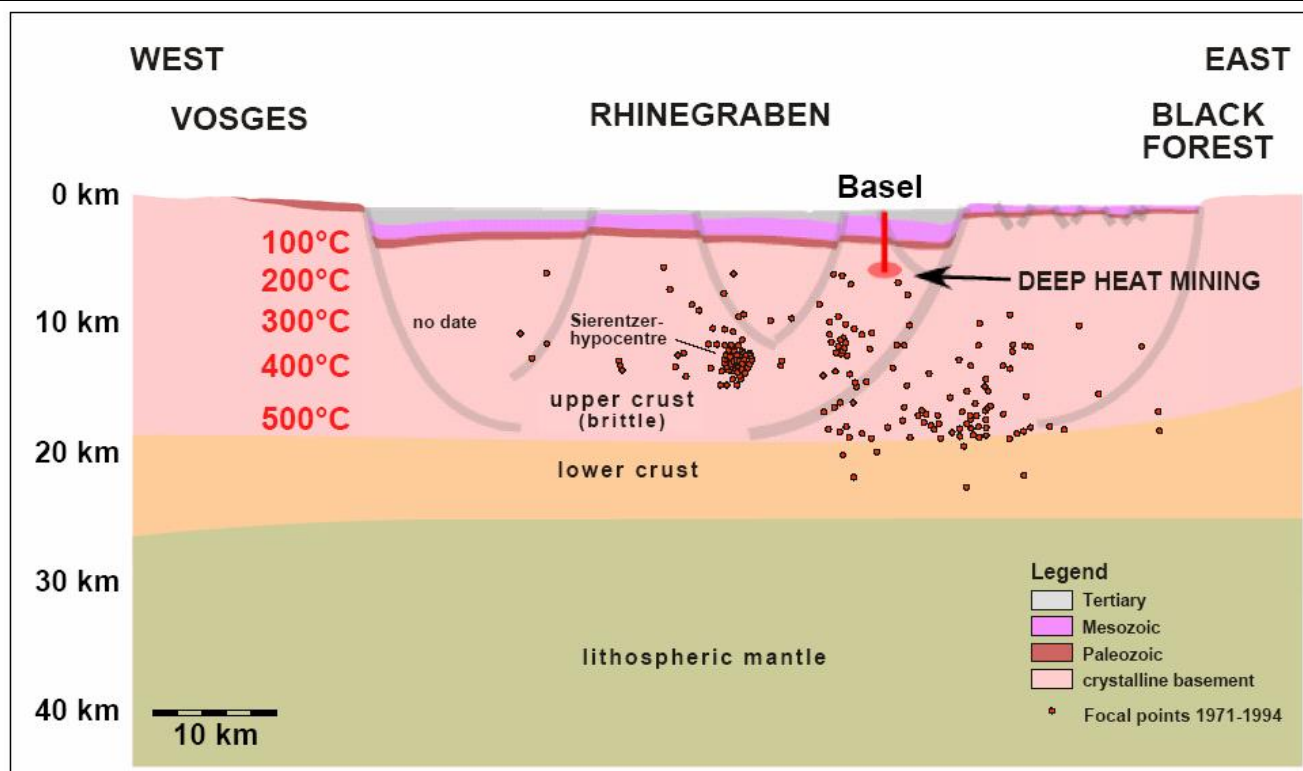


Figure 4: E-W section through the Southern Rhine Graben with focal points (1971 - 1994)

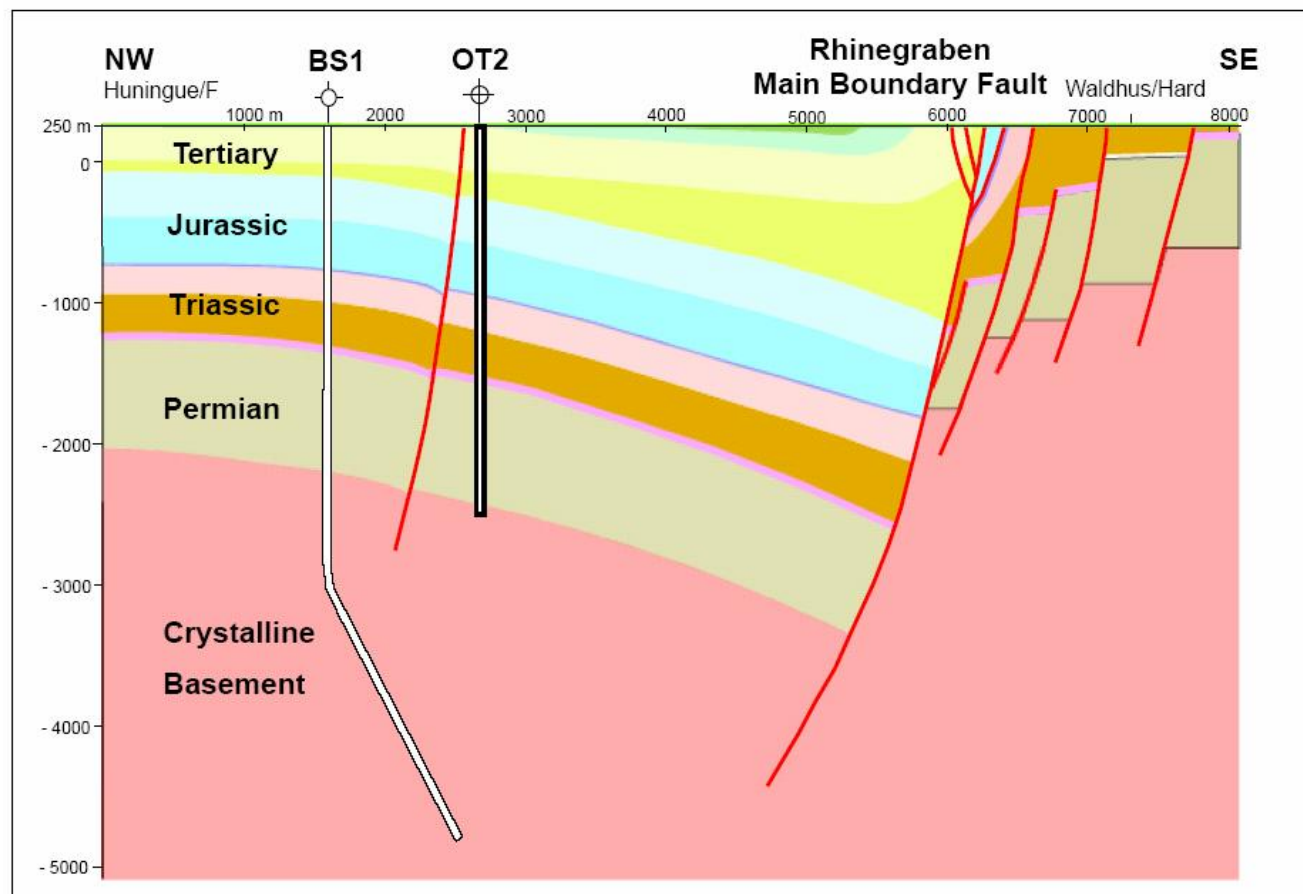


Figure 5: SE - NW section across main Eastern Rhine Graben fault and situation of geothermal wells Otterbach 2 (OT2) and Basel 1 (BS1, planned)

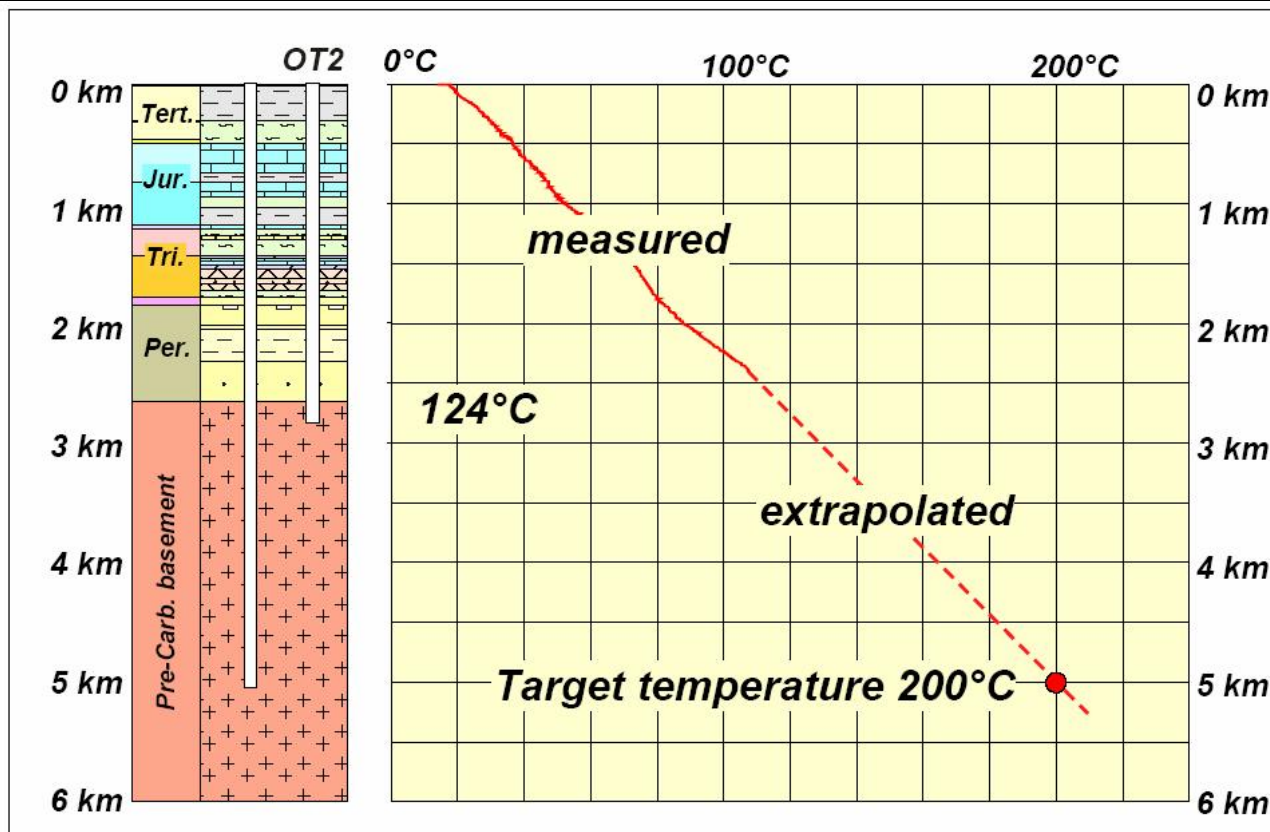


Figure 6: Temperature gradient as measured in well Otterbach 2 (OT2) and extrapolated to target depth.

ΑΛΣΑΤΙΑ , ΜΕΡΟΣ ΔΕΥΤΕΡΟ , ΓΕΩΘΕΡΜΙΚΗ ΕΝΕΡΓΕΙΑ ΜΕΓΑΛΟΥ ΒΑΘΟΥΣ

Όπως προαναφέραμε στον πρόλογο ,εκτός από την επίσκεψη στην έκθεση ορυκτών στο Ste. Marie aux Mines , είχαμε την δυνατότητα να επισκεφθούμε την γενικότερη περιοχή της Αλσατίας και της ρηξιγενούς τάφρου του Ρήνου ,όπου πραγματοποιήθηκε το Ευρωπαϊκό Πρόγραμμα «εξόρυξης» θερμικής ενέργειας από μεγάλο βάθος (Γεωθερμική ενέργεια μεγάλου βάθους) με σκοπό την παραγωγή ηλεκτρικής ενέργειας. Είναι δε γνωστό ότι η θερμότητα της γης οφείλεται κυρίως στην ύπαρξη και διάσπαση ουρανίου και άλλων ραδιενεργών στοιχείων και στην τριβή μεταξύ των διαφόρων γεωτεκτονικών πλακών. Το ανωτέρω άρθρο δείχνει με τρόπο επιστημονικό και παραστατικό την όλη φιλοσοφία και αποτελέσματα από την έρευνα των Ελβετών στην περιοχή των Ελβετο-Γαλλο-Γερμανικών συνόρων. Σήμερα όπου τα προβλήματα με την μόλυνση του περιβάλλοντος είναι μεγάλα λόγω της εκπομπής διοξειδίου του άνθρακα και άλλων αερίων από την καύση λιγνίτη ,άνθρακα ,πετρελαίου , ο άνθρωπος αναζητά καθαρές μορφές ενέργειας με μηδενικές εκπομπές αερίων και η εκμετάλλευση της θερμικής ενέργειας από μεγάλα βάθη αποτελεί μία από τις καθαρότερες μορφές ενέργειας . Ένα τέτοιο πρόγραμμα θα μπορούσε να εφαρμοσθεί και στην Ελλάδα ,αφού σε πολλές περιοχές της Χώρας μας συντρέχουν ευνοϊκές γεωλογικές συνθήκες . Πολλά ωφεληθήκαμε από την επίσκεψη στην Αλσατία.

ALSACE , PART TWO , DEEP SITED GEOTHERMAL ENERGY

Apart from the Mineral show , we gained a great deal of experience by visiting the Graben area of Rhine river in Alsace in the general area of Swiss-French-German borders. It is widely known that Environmental problems due to gas emissions from conventional fuels (oil, coal, lignite) to produce electrical energy have led people to look for clean alternative energy sources such as the deep heat mining from exploitation of geothermal potential in great depths . Such a project will be very successful as there are many promising areas in Hellas.

Από την Αυστραλία - From Australia : Βιβλίο για τον Οπάλιο – Opal Book

A lovely book on Opal, South Australia's Gemstone is available for 22 Australian dollars ,plus postage and handling costs (around 10 AUS \$ per book for Sea Mail or AUS \$ 16 per book for Economy Air Mail). This is a publication of the South Australian Department of Mines and Energy. Size of the book 15 cms X 21 cms , 177 pages full of color photos and maps. (Edition 1992)

This is a book written by people who live and work in the heart of the largest Opal Fields in the world , “speaks” to you and tells you all about Opal : What is Opal ? Geo logy of Opal ,mining methods in the Opal Fields of Andamooka , Coober Pedy Mintabie ,The Opal Industry , Opal mining and the Law, Glossary of Opal , mining terms , selected bibliography and much more. This is some of the information inside this book on one of the most beautiful gemstones : O p a l

How to order in Europe: OΡΥΚΤΟΛΟΓΙΚΑ NEA-NEWS ON MINERALS have been assigned as Official Distributor in Europe for the book: Opal, South Australia's Gemstone. European orders will be forwarded to : Dimitris G. Minatidis , c/o OΡΥΚΤΟΛΟΓΙΚΑ NEA-NEWS ON MINERALS , 70 Queen Sofia Avenue , Piraeus EL-185 32 , Hellas. Tel. Intern. : +30-210-4171-680 FAX : +30-210-4132-570 , E-mail: minat@hol.gr . Payment will be sent-on receipt of Pro-Forma Invoice directly to : Department of Mines and Energy (Attention : The Editor , P. O. Box 151 , Eastwood , South Australia 5063 , Australia . Tel (08)-274-7500 , FAX : (08)-2727-597. thomas.colin@saugov.sa.gov.au

Ανακοίνωση για Βιβλίο περί Οπαλίου

Τα ΟΡΥΚΤΟΛΟΓΙΚΑ NEA-NEWS ON MINERALS έχουν ορισθεί από το Υπουργείο Ορυκτού Πλούτου και Ενέργειας της Νότιας Αυστραλίας ως επίσημος αντιπρόσωπος του εις την Ευρώπη για το Βιβλίο : Οπάλιος , ο Πολύτιμος Λίθος της Νότιας Αυστραλίας. Η τιμή του Βιβλίου είναι 22 δολάρια Αυστραλίας + 10 δολάρια Αυστραλίας για ταχυδρομικά έξοδα επιφανείας ανά βιβλίο ή 16 δολάρια Αυστραλίας για ταχυδρομικά έξοδα αεροπορικώς.

Παραγγελία του Βιβλίου : Η παραγγελία σας δίδεται εις τα ΟΡΥΚΤΟΛΟΓΙΚΑ NEA - NEWS ON MINERALS , Βασ. Σοφίας 70 , Πειραιεύς 185 32 ,τηλέφωνο (210)-4171-680 , FAX: (210)-4132-570 και e-mail : minat@hol.gr . Η πληρωμή γίνεται απ' ευθείας – βάσει προτιμολογίου - εις : Department of Mines and Energy , P. O. Box 151 , Eastwood , South Australia 5063 , Australia (Attention: The Editor) .Tel.(08)-274-7500 , FAX: (08)-2727-597 . thomas.colin@saugov.sa.gov.au

Διεθνής Σύλλογος Συλλεκτών Ορυκτών – International Mineral Club I.T. N. M. C

The International Thumbnail Mineral Club is an International Mineral Club whose members trade minerals and fossils by mail. Members in 16 Countries around the World. Thumbnail News is the bi-monthly Newsletter full of News , articles , letters from members. A members' updated list and much more. There is a membership directory with member names , addresses , trading stock and want list. Membership is US \$ 16 in North America and US \$ 20 overseas air mail. This will cover: The Newsletter Directory and access to the yearly mail auction.

For more information please write to: D. Jorgensen ,6853 W. Abrahamson Rd., Ludington , MI 49431-9402 , USA and do not forget to mention that you read about I.T.N.M.C. in OΡΥΚΤΟΛΟΓΙΚΑ NEA-NEWS ON MINERALS.

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742 pages , 400 EUROS post paid.

ROUGH DIAMONDS , A PRACTICAL GUIDE , 1998 , by Nizam Peters , American Institute of Diamond Cutting , Inc. ,172 pages. 150 EUROS Post Paid.

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Germany: München, 28-30 October 2005 , Mineralientage München : Information: Tel. 089-6134711 , FAX: 089-6135-400 , info@mineralientage.de

Hellas: 19th GeMin 2005 , 26-27 November 2005 . Information : **GeMin** , c/o ORYKTOLOGIKA NEA - NEWS ON MINERALS , 70 Queen Sofia Avenue, Piraeus, EL-18532, Hellas. Tel+30-210-4171-680, FAX:+30-210-4132-570 , e-mail : minat@hol.gr , <http://users.hol.gr/~minat>

PALEONTOLOGY , MINERALOGY : Some of your best contacts :

USA : Fossil News, Journal of Avocational Paleontology , Lynne M. Clos, Editor, 1185 Claremont Dr. , Boulder, Colorado USA 80303-6601 - <http://www.fossilnews.com>

- **Paleontologia em Destaque** , Editor: Marco Aurelio Vicalvi , Depto. De Geologia/ IGEO/ CCMN/ UFRJ , Av. Brigadeiro Trompowsky , s/n , Cidade Universitária , Iiha do Fundão , CEP 21.949.900 , Rio de Janeiro , RJ , Brazil . E-mail: sbp@igeo.ufrj.br ,
- **Site** : <http://www.acd.ufrj.br/geologia/sbp/sbp.htm>
- **A new on Paleontology from Brazil** : <http://www.paleo.cjb.net>

USA: Fossil Sites : <http://home.att.net/~e.j.swearengin/fossils.htm>

SLAG MINERALS –ΟΡΥΚΤΑ ΣΕ ΣΚΟΥΡΕΣ*

Hellas + South Africa + Germany : Διεθνής Ένωση Συλλεκτών Ορυκτών σε Σκουριές (International Association of Collectors of Slag Minerals - IACSM - Founded in 1986 by ΟΡΥΚΤΟΛΟΓΙΚΑ NEA-NEWS ON MINERALS).

Με την συνεργασία **Ελλάδος** + **Νοτίου Αφρικής** + **Γερμανίας** : Join the International Association of Collectors of Slag Minerals and keep informed with Slag Mineralogy , Slag Minerals and Collectors of Slag minerals from around the World. You can write either:

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S. AFRICAN MICROMOUNT SOCIETY, P.O. Box 17273 , Groenkloof, Republic of South Africa

ARGE Schlackenreuebildung , c/o Mr. Elmar Nieding , Konstantine - Noppel Strasse 25 , D -7760, Radolfzell –Germany

*Recently we have received a letter from the Editor of IACSM , Mr. Horst Windisch saying that the edition of the the IACSM Newsletter will be delayed ,we hope temporarily. Already due to the efforts of the last 15 years quite a few Slag Mineral Collectors constitute a dynamic potential which will take over the continuation and coordination of this effort started back in 1986 by ΟΡΥΚΤΟΛΟΓΙΚΑ NEA-NEWS ON MINERALS .

From India-Από την Ινδία: Journal of Gem Industry.Your best contact with India Gem Industry. "Journal House", A-95 Janta Colony,Jaipur 302 004 , India. Tel.91-141-614-398 , 610906 , 618002, 602900 FAX : 91-141-602973 , 564260 , 568233, diaworld@sanchamet.in website : <http://www.diamondworld.net> and <http://www.gemjournal.com> . Editor Mr. Alok Kala

Exchange of Minerals-Ανταλλαγές Ορυκτών

Από το Ηνωμένο Βασίλειο - from UK: Mr. Steve Bown , 26 Mendip Heights , Didcot, Oxfordshire OX11 7TB- UK , is a newcomer in the Collection of Micromounts and wants to contact other Micromounters in Hellas and other Countries. A warm welcome to Steve , who deserves a welcome accompanied by some micros donated to him to help him move forward.

Από Ελλάδα - From Hellas : Ο κ. Μιχάλης Σαμούχος ,Μεγίστης 23 Καλλιθέα EL-17673 ανταλλάσσει ορυκτά. -Mr. Michalis Samouhos , Meghistis 23, Kallithea , EL-17673, HELLAS, wishes to exchnage minerals with collectors from all over the World.

Από την Ιταλία -From Italy : Mr. Fabio Bigazzi ,Via dell'Acqua Ghiaccia, 4 - Fontana - 53038 Staggia Senese - Si - Italy - fontana99@valdelsa.net , exchanges minerals with collectors around the World.

Ο ανωτέρω Ιταλός συλλέκτης επιθυμεί να ανταλλάξει ορυκτά με συλλέκτες από την Ελλάδα και από άλλες Χώρες.

19th INTERNATIONAL MINERAL , GEMSTONE JEWELLERY AND FOSSIL EXHIBITION

26-27 NOVEMBER 2005

GeMin 2005



Hotel ROYAL OLYMPIC

Diakou street 28-32 , Athens EL - 117 43 , HELLAS

Tel. +30 - 210 - 9226-411 / FAX :+30- 210 - 9233-317 e-mail : royaloly@hol.gr

Topic of GeMin 2005 : Minerals and Health

26-11-2005 Saturday	9 a.m. - 10 p.m. (All day open)
27-11-2005 Sunday	9 a.m. - 9 p.m. (All day open)

INFORMATION :

ORYKTOLOGIKA NEA-NEWS ON MINERALS

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GeMin , Your Mineral ,Gem , Jewellery and Fossil Exhibition in Southeastern Europe.

- Most of major European Mineral, Gem and Fossil shows take place in Western Europe . GeMin show in Athens ,Hellas , is the unique event of its kind which covers the Mineral, Gem , Jewellery and Fossil activities , Industry and Earth Sciences and fills the gap in this part of Europe. ΟΡΥΚΤΟΛΟΓΙΚΑ ΝΕΑ-NEWS ON MINERALS is widely known that sponsors the GeMin show since 1987 , but our publication has and will continue to support within its possibilities any effort on Earth Sciences and especially on Minerals, Gems and Fossils. We always believe that this is the only way to enhance the Sciences of Mineralogy , Paleontology in the form of hobby as well as enhance the Gem Industry. It is the least acknowledgement to all those people who look for minerals ,gems and fossils in the remote areas of the Earth and bring them in front of Collectors at various Shows. It is the least acknowledgement to all those suppliers of Gem Rough and superb Mineral and Fossil Specimens from around the World.

One of the most striking features of Athens GeMin show is its substantial sales potential as Hellas is one of major tourist destinations in the World and apart from collectors in Hellas ,thousands of collectors come as tourists and buy minerals, gems and fossils. Companies have realized this and so there is an inflow of material every year in the Market here.

- GeMin show is the most comfortable show in Europe as the organizing Committee takes care for the comfortness both the Exhibitors and the visitors. A great deal of superb specimens ,gems and fossils are expected to be on display during 19th GeMin 2005 to be held in Athens on 26-27 November 2005 and we invite all to be present in this big event in Athens either as Exhibitors or as Visitors.

-Another parameter which is seriously taken into consideration by the Organizing Committee of GeMin is the junior section : The future are the pupils ,the students and in general the younger generation of collectors ,so schools are urged and invited to visit GeMin ,so young people have the chance to come across with mineral specimens, gems and fossils but also with educational products on Earth Sciences.

GeMin Exhibition and ΟΡΥΚΤΟΛΟΓΙΚΑ ΝΕΑ-NEWS ON MINERALS was present with their stand both in Tucson 2005 and Las Vegas 2005 (Mirage Hotel) sending an Invitation to the International Mineral, Gem and Fossil Community through these two major North American Shows that GeMin and ΟΡΥΚΤΟΛΟΓΙΚΑ ΝΕΑ-NEWS ON MINERALS are all they need to expand business activities in the Market of Southeastern Europe centered on Athens , Hellas.

Χρησιμοποιείστε την φιλική φράση : Σας βρήκα στα ΟΡΥΚΤΟΛΟΓΙΚΑ ΝΕΑ - NEWS ON MINERALS.

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Σημειώστε στο ημερολόγιό σας : 26 και 27 Νοεμβρίου 2005 είναι η 19η GeMin 2005 , Έκθεση Ορυκτών , Απολιθωμάτων και Πολυτίμων Λίθων.

Γνωρίστε το και στους φίλους σας

Do not forget : 26-27 November 2005 is the 19th GeMin 2005 International Mineral, Gemstone , Jewellery and Fossil Exhibition in Athens.

Μη χάσετε την 19^η GeMin 2005 Έκθεση Ορυκτών , Απολιθωμάτων και Πολυτίμων Λίθων Στις 26-27 Νοεμβρίου 2005 στο ROYAL OLYMPIC.

Ενδιαφέρουσες ιστοσελίδες στο Διαδίκτυο για Συλλέκτες Ορυκτών, Πολυτίμων Λίθων και Απολιθωμάτων
 Interesting sites in the web for Mineral, Gem and Fossil Collectors

MicroMinéral Market

-Για τους συλλέκτες ορυκτών σε μικρό μέγεθος, οι οποίοι κατά κανόνα είναι συλλέκτες Συστηματικής Ορυκτολογίας

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- For micromounters

An interesting site in the Internet for micromounter can be found at <http://www.micromineral-market.com> (or you may be redirected to <http://micromineral.geoglob-market.com>). The site is in french language but the "language of minerals" can be read by all mineral, gem and fossil Collectors!

MicroMinéral Market, 2 rue fernand leger 66000 Perpignan (FRANCE). Tel. +33 06.62.88.29.90 - FAX : +33 04 26.68.98.43, e-mail : info@micromineral-market.com

Inet)Mineral Portal

Μία άλλη ενδιαφέρουσα ιστοσελίδα στο διαδίκτυο για Γεωεπιστήμονες είναι η <http://www.inet-mineral.com/index800.html>, αφού καλύπτει θέματα σχετικά με την Ορυκτολογία, Παλαιοντολογία, Γεωμεταλλευτική έρευνα, Κοιτασματολογία, Συλλογή Ορυκτών και Απολιθωμάτων, Ανάπτυξη Λογισμικού, φωτογραφίες ορυκτών και πολλά άλλα συναφή θέματα.

Another interesting site in the web can be found at <http://www.inet-mineral.com/index800.html>, as this site covers aspects related with Mineralogy, Paleontology, Prospection Ore Deposits, Collection of minerals, Boutiques, Development.

Inet)Mineral Portal, 2 rue fernand leger 66000 Perpignan (FRANCE). Tel. +33 06.62.88.29.90 - FAX : +33 04 26.68.98.43, e-mail : info@inet-mineral.com

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<http://www.musee-fossiles.com>

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DINOSAUR - THE EARTH and THE MYSTERY OF LIFE, GYEONGNAM GOSEONG DINOSAUR, WORLD EXPO 2006, KOREA

Gyeongnam Goseong Dinosaur World Expo

Organizing Committee Foundation

Danghangri 57, Hoehwamyeon, Goseonggun, Gyeongsangnamdo, Korea

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Event Outline

* Topic : "Dinosaur, the Earth and the Mystery of Life"

* Venue : Gyeongsangnamdo Goseonggun Danghangpo Tour Resort (Sangjokam County Park)

* Duration : 14 April 2006 to 4 June 2006 (52 days)

* Sponsor : Gyeongsangnamdo Goseonggun

Background on the Expo Host

The Scholar and the Actual Worth of the Gyeongnam Goseong Dinosaur Footprint

* The Dinosaur Footprint Site was first discovered in Korea (January 1982) : Gyeongsangnamdo Goseonggun Haimyeon Deokmyeongri

- The region with the highest discovery rate of dinosaur footprint fossils

* Natural Monument No 411 : Dinosaur and Bird Print Fossil Site in Deokmyeongri, Goseonggun (Appointment in September 1999)

- Information about dinosaur footprint fossils in the Goseong and Sangjokam Layers are recorded in 4th grade textbooks.

* The World's Top 3 Dinosaur Footprint Fossil Sites

- Colorado, USA, West Coast of Argentina and Gyeongsangnamdo Goseonggun, Korea

* Footprint fossil development sites around the World

- The only region that simultaneously discovered both the smallest footprints (9 cms) and the biggest footprints (115 cms) is Sauropoda (Hoehwamyeon, Goseonggun, Gyeongsangnamdo, Korea)

* It is also discovered rare structures, like the dinosaur egg structure of Ornithopods.

* The region was presumed as the site where dinosaurs laid their eggs during the Cretaceous Period , after the discovery of more than three kinds of dinosaur eggs there.

* It also has many bird footprint fossils from the Cretaceous Period and many other rare fossils.

Plans

* Exhibitions : Main Hall (Dinopia Hall - Dinosaurs World) , Fossils from Around the World , Marine Life , Marine Reptiles , Pterodons (Flying Dinosaurs) , Dinosaurs Exhibit , Dinosaur Characters and Interactive Dinosaur Experience

* Incidental Places of Interest : Different Events , Dinosaurs Playground , Dinosaurs Exploration and Sangjokam Field Trip.

* Hosting of the Worldwide Dinosaurs Seminar

- A Korean , Chinese and Japanese seminar sponsored by the Paleontological Society of Korea

- A Gyeongsangnamdo Goseong Dinosaurs World Expo

Commemorative Seminar by the Geological Society of Korea

- Retention of the IGCP (International Geological Contrast Plan) Program , the main project of the International Geological Unit.

- Revival of International Exchange Projects

- Development of Exchange Projects , led by the Dinosaurs Museums of the different participating local governments of Japan , China , Canada etc

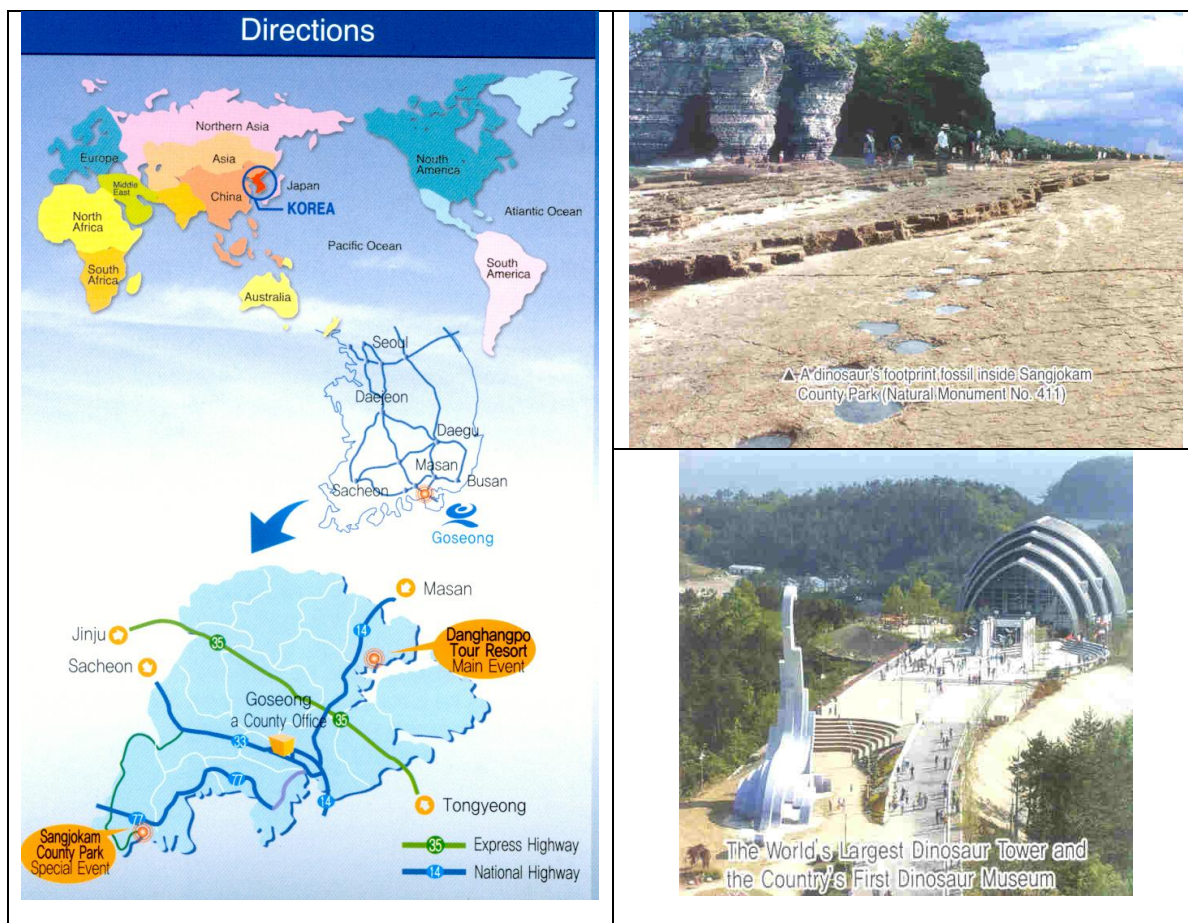
- Development of Civilian-led Exchange Projects through the USA Fossils Supply Unit (involving jewelry , minerals and fossils)

- Intensification of participatory events

- World University Students Dinosaurs Camp , World Dinosaurs Stamp Show and the Dinosaur

Models Show

***** Despite distance between Hellas and Korea , [ORYKTOLOGIKA NEA-NEWS ON MINERALS](#) would welcome any proposal to bring Mineral ,Gem and Fossil activities between those two Countries closer either by organizing a trip of Dinosaur students from Hellas to Korea during the World Expo or urging the Goseong Dinosaur Museum ,The Paleontological Society of Korea and Mineral ,Gem and Fossil Companies from Korea to participate in 19th [GeMin](#) 2005 International Mineral , Gem , Jewelry and Fossil Exhibition to be held in Athens , Hellas on 26-27 November 2005. Needless to say that [ORYKTOLOGIKA NEA-NEWS ON MINERALS](#) can be also a link between Geoscientists and Collectors from Korea and Hellas.



A BIG SHOW ON DINOSAURS , THE EARTH , MINERALS , GEMS AND FOSSILS IN KOREA

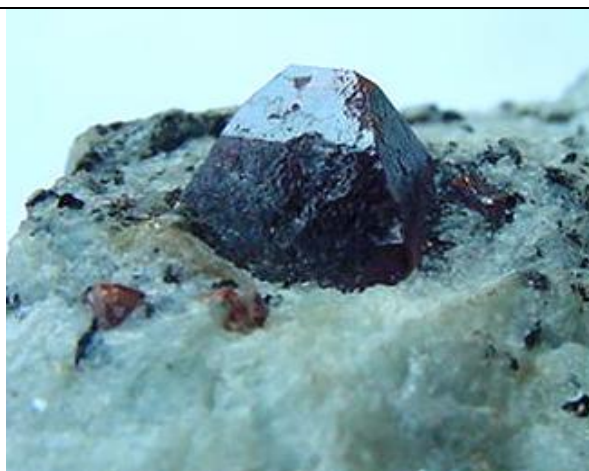
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-Αυγά και μπάλες από σιδηροπυρίτη
-Eggs and balls (spheres) made of Pyrite



Zircon crystals on rock matrix , Pakistan →



- Rare cavansite crystals from India



- Σπάνιοι κρύσταλλοι καβανσίτη από την Ινδία

Do not loose the 19th [GeMin](#) 2005 to be held in Athens on **26-27 November 2005** , real Mineral , Gem and Fossil Festival for all people interested in Minerals , Gems and Fossils



-Οκταεδρικοί κρύσταλλοι φθορίτη από την Κίνα
-Octahedral crystals of fluorite from China



-Κρύσταλλοι κυανίτη από τις Άλπεις



-Kyanite crystals from Alps



- Hanksite ,Searls Lake , California ,USA
-Χανκσίτης , Λίμνη Searles , Καλιφόρνια , ΗΠΑ

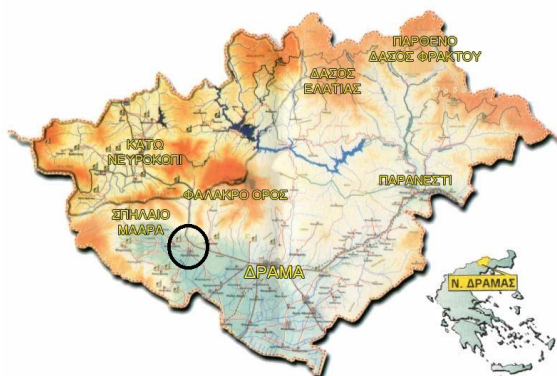
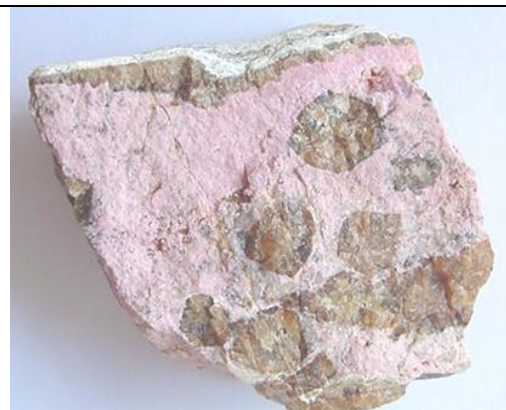


- Σπάνιοι κρύσταλλοι καβανσίτη από την Ινδία
- Rare cavansite crystals from India

Ο δαίμων του τυπογραφείου κτύπησε ,καθόσον στο προηγούμενο τεύχος Μαΐου-Ιουνίου 2005 το άρθρο του κ. **Αναστασίου Τσινίδη** , **Αδαμαντίου Κοραή 18** , **Καλαμαριά Τ. Κ. 55132** , **Θεσσαλονίκη** (Τηλέφωνο κινητό 6974792275)

για ορυκτά από την περιοχή Πανοράματος , Δράμας είχε τίτλο «**Ροδονίτης** , Ανδραδίτης , σπessαρτίνης , γροσσουλάριος γρανάτης + Βεζουβιανίτης (ποικ. Καλιφορνίτης) από την περιοχή Πανοράματος , Δράμας» και όχι **Ροδοχρωσίτης** , Ανδραδίτης , σπessαρτίνης , γροσσουλάριος γρανάτης + Βεζουβιανίτης (ποικ. Καλιφορνίτης) από την περιοχή Πανοράματος , Δράμας

The daemon of typography stroked again as the article of Mr. Tsinidis Anastassios Adamantiou Korai 18 , Kalamaria EL-55 132 , Thessaloniki (Tel. Mobile +30-6974792275) in former issue May-June 2005 was on "**Rhodonite**, Andradite , spessartine , grossular garnet + Vesuvianite (var. Californite) from the area of Panorama, Drama and not on "**Rhodochrosite**, Andradite ,spessartine ,grossular garnet + Vesuvianite (var. Californite) from the area of Panorama,Drama.



**Rhodonite (pink) with andradite and/or spessartine garnet + Californite ,
Panorama , Drama , Hellas**

More on minerals from Panorama and Nevrokopi , Drama County ,Eastern Macedonia ,Northern Hellas – The paradise locality of quartz crystals with numerous mineral inclusions.

Εγκλείσματα σε κρυστάλλους χαλαζία από το σκάρν της περιοχής «Πανόραμα» Ν. Δράμας

1. Αιματίτης σε ορεία κρύσταλλο 2. Διπλό «Φάντομ» σε ορεία κρύσταλλο 3 και 3α. Εγκλείσματα αιματίτη (μαύρα) στη βάση και «νιφάδα» δολομίτη στο μέσον ορείας κρυστάλλου 4. Καμπύλος κρύσταλλος πρασίου (από εγκλείσματα επιδότου). Πολύ σπάνιο το σχήμα του κρυστάλλου 5. «Φάντομ» από εγκλείσματα επιδότου σε ορεία κρύσταλλο 6 , 6 α, 6 β . Κρύσταλλος δολομίτη διαπερνά κρύσταλλο χαλαζία 7. Κρύσταλλος δολομίτη εξέχει από κρύσταλλο χαλαζία . Στη βάση του χαλαζία μαύρα εγκλείσματα αιματίτη 8. Εγκλείσματα επιδότου και άλλων ξένων σωμάτων σε κρύσταλλο χαλαζία 9 και 9α. Αιματίτης και δολομίτης στη βάση εξαιρετικής καθαρότητας κρυστάλλου χαλαζία. 10. Ο κρύσταλλος αυτό παρουσιάζει ιριδισμό στο εσωτερικό της κορυφής του χαλαζία.

Εγκλείσματα σε κρυστάλλους χαλαζία από το Κάτω Νευροκόπι του Νομού Δράμας

11. Καπνίας Χαλαζίας με ρουτίλιο 12. Αιματίτης (κόκκινες ίνες) σε αμέθυστο 13. «Νέφος» από μικροσκοπικά εγκλείσματα νερού σε ορεία κρύσταλλο

Όλοι οι κρύσταλλοι από την περιοχή Πανοράματος βρέθηκαν στην ίδια «φωλιά» μέσα σε επιδοτίτη (εικ. 14) . Συνολικά η φωλιά περιείχε περί τους 300 κρυστάλλους χαλαζία μερικώς ή εξ ολοκλήρου πράσινους από εγκλείσματα επιδότου. Μαζί βρέθηκαν και κρύσταλλοι δολομίτη, αιματίτη «Iron Rose» και οξειδωμένο σιδηροπυρίτη.

Mineral inclusions in quartz crystals from Skarn of Panorama area , Drama County , Eastern Macedonia ,Hellas.

1. Hematite in quartz 2. Double "phantom" in quartz 3 and 3a Inclusions of hematite (black) and dolomite flake in quartz. 4. Curved prase crystal (inclusions of epidote) 5. «Phantom» of epidote in quartz 6 , 6a and 6b Dolomite crystal penetrating quartz 7. Dolomite crystal in quartz 8. Epidote and other mineral inclusions in quartz 9 and 9a Hematite and dolomite at base of an extremely clean quartz 10. This crystal presents a kind of iridescence on top

Mineral inclusions in quartz crystals from Nevrokopi area of Drama County

11. Smoky quartz with rutile inclusions 12. Hematite (red needles) in amethyst 13. A cloud of microscopic water inclusions in quartz.

All crystals in the Panorama area were found in cavities inside epidotite (photo 14). The cavity contained about 300 crystals of quartz in part or totally green due to epidote inclusions. Along with quartz crystals ,dolomite , hematite of iron rose type and oxidized Iron pyrite were found associated with.



Η περιοχή Πανοράματος στον Νομό Δράμας (βλέπε χάρτη) αποτελεί μία περιοχή πολύ ενδιαφέρουσα από πλευράς συλλογής ορυκτών , ειδικότερα δειγμάτων κρυστάλλων χαλαζία με εγκλείσματα άλλων ορυκτών , όπως φαίνεται από τα δείγματα τα οποία έχει συλλέξει ο συλλέκτης κ. Αναστάσιος Τσινίδης.

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Robert Wayne Hicks-Beloved soul mate of Ev passed away suddenly at home on 27th February at age 64.Born on 6th February,1941 in Williston Noth Dakota he was the second son of Melvin Wayne Hicks and bertha Barbara Greutman. Bob will be deeply missed and always remembered by his brother Herb , nephew Allan Hicks of Seattle , Washington; niece Joanne Myers , husband Michael and daughter Alyssa of Paso Robles California; niece Janine Marion , husband Ken and son Lukeof Paso Robles; and his beautiful tabby kitten Nica. Bob was a true chile of nature spending early child hood years roaming the prairies with his boyhood friends; or guided by his father, searching for artcrafts and tepee rings or with his mother looking for spring ' s first crocus. His fascination with "rocks" continued right till his death. From a very early age he was an avid fly fisherman and upland game bird hunter. Music has always been a part of his life and at age fifteen he had his first jazz music program "Music for Moderns". It was broadcast on Saturday night over the local radio station. After graduating high school he enrolled in Brown Institute of Broadcasting and worked for two years at KSTP radio station in Minneapolis. He began his art education at Minneapolis School of Art and went on to earn a bachelor of Fine Arts graduating with distinction from California College of Arts and Crafts in Oakland. In 1974 he earned a Master of Fine Arts graduating with great distinction from the University of Washington in Seattle. In 1965 he met and married Evelyn Scoville in Santa Barbara , California. In 1976 they moved to Lethbridge where for many years Bob taught jewellery courses at LCC and up to 1990 taught at the U of L in the fine arts department. In 1978 he began working with ammonite and was instrumental in establishing the Aragonite Project , the first ammonite mining and cutting operation on the Blood Reserve. As he moved away from academia , his jewellery pieces , many intricately carved and fabricated became mini sculptures. He had a passion for cutting gem stones and was noted for his expertise with Ammolite as well as opal. He played acoustic bass with the musical group Chameleon. His integrity , gentle mien , sense of humour and respect for his friends and peers was unsurpassed. He gave willingly , never asking for nor expecting anything in return. A celebration of Bob 's life was held on 9th March.

(We thank Pierre Stéphane Salerno , for the above information on Bob Hicks and we must emphasize that we had "met" with Bob - through Pierre Salerno - and collaborated with him in making known his efforts on Bacculites by publishing articles and by having on display in GeMin Exhibition in Athens samples of his gemstone work).

Dimitris G. Minatidis

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