

Preface

In 1999, Geofond continued to maintain, update and open files and databases containing the results of geological works, while amending the contents of these databases and improving their quality.

In addition, Geofond worked on numerous projects commissioned by the Ministry of the Environment of the Czech Republic. Specifically, these projects included "Re-evaluation of deposits of state-controlled minerals in the Czech Republic", "System of specialized databases related to the Register of Mineral Deposits of the Czech Republic", and "Processing of geological documentation from archives taken over by Geofond". The project "Unified system of geological, hydrogeological, geochemical and geophysical databases in relation to the Database of Boreholes" was modified under a new title "Complex Information System of Geofond of the Czech Republic". The new project integrates also other subsystems, including SURIS, the Information System on Mineral Resources, into a central interactive database using one type of software. In mid-1999, we started another new project "Compilation of the Main Mining Works ". This project is our response to requests by the Czech Mining Bureau, the Mining Department of the Ministry of Industry and Commerce, and the Department of Geology of the Ministry of Environment of the Czech Republic to register the main past and present mining works.

This Annual Report summarizes the principal activities of Geofond in 1999 while also mentioning our economic results. We were led by the desire to provide all necessary information to state authorities of the Czech Republic as well as to the geological and non-geological public. More details can be found in the "Report on the Management and Activities of Geofond in 1999", prepared for the Ministry of the Environment of the Czech Republic.

The contents of the present Annual Report can be found on the Internet on our home page <http://www.geofond.cz>. On the same home page, more general information on Geofond is available. We would also like to draw your attention to the possibility of browsing in a digital file of unpublished reports and expert assessments archived in Geofond (the so-called Documentographic Database), and access a map of locations of boreholes which contains coordinates of nearly 600 thousands objects listed in the Database of Boreholes, including main descriptive parameters of these objects. Both these tools are now linked to Geofond's web page.

Dr. Vladimír Shánělec
Director of Geofond

1. Main activities in 1999

Priority projects

1. Service to state authorities in fulfillment of requests made on day-to-day basis. These individual requests had not been specified at the beginning of the year and therefore were not made part of formalized projects. Our main *ad hoc* tasks included:

- Evaluation of comments on the draft amendatory act to legislation no. 62/1988 Coll. by the Czech National Council On Geological Works, as modified by later regulations; evaluation of comments on the draft amendatory act to legislation no. 44/1988 Coll. On Protection and Exploitation of Natural Resources, as modified by later regulations (Ministry of Environment).
- Preparation of an ordinance on registration of geological works and rules on provision of the results of geological works to the public. This ordinance will be related to amendatory act to legislation no. 63/1988 Coll. by the Czech National Council (Ministry of Environment).
- Preparation of an ordinance on record keeping with respect to geological works and structuring of geological documentation. This ordinance will be related to amendatory acts to legislation no. 62/1988 Coll. and no. 44/1988 Coll. by the Czech National Council (Ministry of Environment).
- Preparation of guidelines for provision of the results of geological works and of geological documentation to the public through Geofond (Ministry of Environment).
- Preparation and discussion of drafts of the Statements Hor (Ministry of Industry and Commerce) 1-01 and Geo (Ministry of Environment) V3-03 to be filed in the year 2000 by mining companies. The wording of these Statements has been approved by the Czech Statistical Bureau as part of the Program of collection of statistical data in 2000, published in Section 85 of the Collection of Laws (Ministry of Environment, Ministry of Industry and Commerce, Czech Statistical Bureau).
- Formulation of guidelines for filling in the forms of the Statements Hor (Ministry of Industry and Commerce) 1-01 and discussion of these guidelines (Ministry of Industry and Commerce, Czech Mining Bureau).
- Evaluation of experience in enforcement of legislation no. 44/1988 Coll. (Mining Law) and legislation no. 61/1988 Coll. (Law on Mining-related Works) by the Czech National Council. The conclusions will be used in preparation of a new Mining Law (Ministry of Environment).

- Preparation of basic documents for an update of the State Policy on Raw Materials which was approved by the Czech Government in December 1999 (Ministry of Industry and Commerce, Ministry of Environment).
- Collaboration on formulation of structure and aims of the State Policy on Raw Materials in Individual Regions of the Czech Republic. The documents are related to both the nation-wide Policy and the establishment of Regions (new territorial division of the state; Ministry of Industry and Commerce, Ministry of Environment).
- Comments on substitutional restitutions and sales of state-owned land from the point of view of protection of mineral resources of the state (Ministry of Environment, Land Fund)
- Preparation of maps of protection of mineral deposits for the state mining administration (Czech Mining Bureau, Regional Mining Bureau).
- Verification of proper qualifications of Principal Investigators of research reports submitted to Geofond (Ministry of Environment).
- Release of digital data sets on hydrological objects in the protected zones of spas and on mineral water resources, including geological profiles and signal information on mineral deposits and undermined areas in the protected zones (Ministry of Health Service).
- Preparation of data on hydrogeological objects to be designated as water supplies for the population of the Czech Republic during large-scale crises (Ministry of Health Service).
- Preparation of basic documents for the state-funded projects "Geological structure of Moravia in relation to landslide hazards", "Reduction of regional pollution of surface and ground waters in the Czech Republic", "Geodynamical model of the boundary between the Bohemian Massif and Western Carpathians", and "Geoecological study of the Protected Area Broumovsko" (Ministry of Environment).
- Preparation of data for a conceptual document on teaching and research for the Faculty of Science, Charles University, Prague, Mining Polytechnic, Ostrava, Polytechnic, Prague, Faculty of Science, Masaryk University, Brno and Faculty of Environmental Science, Purkyně University, Ústí nad Labem.
- Compilation of existing data for the project VaV/630/1/98 "Basic and specialized geological mapping in the Czech Republic on scale 1:25,000" coordinated by the Czech Geological Survey (15 sheets), and for the project VaV 630/3/99 "Potential of using geothermal sources for energy production. Use of geothermal energy in affected areas"; Principal Investigator Geomedia Ltd.

2. Publication of "Evaluation of reserves of state-controlled mineral deposits in the Czech Republic" and "Register of reserves of mineral deposits of the Czech Republic", an updated version as to January 1, 1999.

In May 1999, three parts of "Evaluation of reserves of state-controlled mineral deposits in the Czech Republic" were published (I. Ores, Trace Elements, II. Fossil Fuels, III. State-controlled Non-metallic Mineral Deposits). Also in May 1999, "Register of reserves of mineral deposits of the Czech Republic" containing building materials (uncontrolled by the state) was published. Both publications were distributed to 42 bodies of state administration of the Czech Republic

3. Publication of the annual report "Raw Materials of the Czech Republic – Mineral Resources" - updated as of January 1, 1999.

This publication represents the only generally accessible material on the mineral potential of the Czech Republic. It also gives a list of the main mining companies. Number of copies: 300 (in Czech), 100 (in English). Publication date: June 30 and July 31, 1999 for the Czech and English edition, respectively.

4. Preparation of the report "Changes in the reserves of state-controlled mineral deposits between 1989 and 1998".

This material, for internal use only, will serve to the state administrative bodies (Ministry of Industry and Commerce, Ministry of Environment, State Mining Authority) when preparing basic documents for the State Policy on Raw Materials. Basic data on international prices of industrial minerals are also published in "Raw Materials".

5. Collaboration on State Information Policy in the Area of Geosciences.

Geofond prepared a material titled "Framework Document on Information Policy in Geosciences". It was concluded that it is necessary to broaden the existing project "Unified system of geological, hydrogeological, geochemical and geophysical databases in relation to the Database of Boreholes" to "Complex Information System of Geofond of the Czech Republic".

6. Logistics for the Statistical Statement Hor (Ministry of Industry and Commerce) 1-01.

In accordance with an agreement between Geofond and the Ministry of Industry and Commerce, we prepared suitable software for collection and outputs of data, entered a pilot data set and verified functioning of the system. We prepared stickers with addresses, Statement forms and guidelines for form completion and mailed them to mining companies.

Specific tasks

1. Coordination and management of projects financed from the Fund of Geological Works of the Ministry of Environment.

- *Re-evaluation of state-controlled mineral deposits of the Czech Republic.*

The most recent, third version of the project was used. In 1999, a total of 56 deposits were re-evaluated, of which there were 2 ore deposits, 11 deposits of solid fossil fuels, 20 deposits of non-metallic minerals, and 23 deposits of building materials. The Reserves Cancellation Commission received 13 proposals for reserve cancellation. A decision on reserve cancellation was passed in 12 cases, cancellation was not approved in one case. 18 proposals to write off mostly clay deposits suitable for brick making are prepared for discussion. The Regional Departments of the Ministry of Environment received 6 proposals for change in the limits of protected areas surrounding mineral deposits, and 13 proposals for cancellation of protected areas surrounding mineral deposits (for deposits whose reserves were to be written off). The decisions passed were taken into account in compilation of maps of deposit protection.

- *Specialized databases for the Register of Mineral Deposits of the Czech Republic*

This project, initiated in 1997, continued in collaboration with sub-contracted organizations. As to December 31, 1999, a total of 652 records of general data on mineral deposits and 141 records of technology-related and qualitative data on the deposits were entered.

- *Complex processing of geological documentation from archives taken over by Geofond, part II.*

By the end of part II of this project, the following number of items were processed:

--- *Ore Mines Příbram*: 433 selected reports from the company's archive were processed. The selection of reports of interest was finalized, and copies of 125 reports were accepted for preservation in Geofond.

--- *SUL Příbram*: 629 reports documentographically processed. Selection of reports was finalized and copies of 23 reports were accepted for preservation in Geofond.

--- *Unigeo Ostrava*: Archive of geological reports and expert assessments was compared with items already registered/kept by Geofond. A total of 2,070 items are ready for further verification.

--- *Geologie Rýmařov*: The company's archive was compared with items kept by Geofond, 57 reports were taken over.

--- *Center for Documentation of Gold Deposits, Jílové*: Collection of manuscripts and documentographic processing continued. Focus put on detailed processing of

reports by the local branch of the Ore Mines Příbram company as well as on maps of gold deposits.

--- *VPŮ*: Processing completed by inclusion of the remaining 644 reports.

--- *Geoindustria GMS*: The engineering-geologic archive and geophysical archive were documentographically processed. 734 reports were taken over by Geofond (in all 1,695 reports were taken over since the beginning of this project). Checked duplicities were re-numbered using the system of Geofond and transported to the storage facility Kovanice. In a similar fashion, duplicates were identified in the regional archive Vráž. This archive will be moved in early 2000. We newly acquired archives of the closed Branch Dubí containing 5,000 items.

- *Complex Information System of Geofond* - see research activities.
- *Setting-up a Database of the Main Mining Works*

This project started in 1999, based on approval by the Ministry of Environment dated June 26, 1999. Data on 2,659 objects were collected. The database will be further enlarged in 2000-2003.

2. Completion of the Database of Areas Affected by Mining Activities, Reclaimed Areas and Areas Under Revitalization in the Czech Republic (regions Brno, Olomouc and Ostrava).

Information was obtained from 142 organizations based at 310 deposits with 359 existing mining areas. The database will be updated on a yearly basis using the Hor 1-01 Statements.

3. Reconstruction of the storage facility Kovanice.

The reconstruction was completed in September 1999. Furnishing and installation of safety equipment will depend on further money allocation. Only then the facility can be used for storage of documents from endangered archives.

2. Regular activities

In addition to priority projects and specific tasks, we continued to maintain, update and revise our documentographic and factographic databases, which are in permanent use by our clients.

Archiving, documentation and compilations

These activities are quantified in summary tables and graphs. The numbers can be easily compared with the previous years.

Summary of the numbers of manuscripts received by Geofond and loans in 1981-1999.

Summary of the numbers of manuscripts received by Geofond and loans in 1981-1999.					
Year	number of received manuscripts	number of *) subjects	number of visitors	loans Reports + Expert Assessments	maps
1981	3.030	not determined	5.034	14.853	9.730
1982	2.968	not determined	7.439	20.987	13.218
1983	3.180	not determined	7.366	19.882	12.526
1984	4.018	not determined	8.178	21.562	19.736
1985	3.631	not determined	7.648	21.500	12.564
1986	3.835	not determined	7.609	23.272	15.790
1987	4.311	not determined	7.907	25.624	12.797
1988	3.582	not determined	7.736	24.847	10.774
1989	4.956	not determined	7.283	22.467	11.351
1990	4.503	102	7.375	21.524	13.334
1991	3.508	83	6.044	21.041	12.603
1992**)	2.971	77	3.947	28.083	7.505
1993	3.003	141	3.570	19.408	7.053
1994	3.122	138	3.794	19.347	7.027
1995	3.143	142	3.709	16.035	5.385
1996	3.411	123	3.743	18.148	4.741
1997	2.786	110	3.445	14.934	4.763
1998	4.234	114	3.638	15.217	4.460
1999	2.868	100	3.436	14.913	4.800

*) first authors or legal entities who produced the manuscript

**) change in methodology of counting loans and visitors

Types of reports taken over by Geofond in 1999

	pieces	%	Out of that		
			VPÚ	GMS	GR
Engineering Geology	1764	61,5	452	570	45
Hydrogeology	769	26,8	192	100	6
Research Reports	28	0,9	-	2	-
Reports on Ore Deposits	*)102	3,6	-	60	6
Reports on Foreign Travel	93	3,3	-	1	-
Other	112	3,9	-	1	-
Total	2868	100,0	644	734	57

*) of this, 19 re-evaluations of reserves

VPÚ - archive of the Military Project Institute

GMS - archive of GMS Prague

GR - archive of Geologie Rýmařov Ltd.

The total number of acquired reports was lower in 1999 compared to 1998, but similar to 1997. The decrease was caused by fewer reports resulting from new geological works (1,433 reports out of 2,868, i.e., a 28 % decrease relative to 1998). It cannot be ruled out that some reports have not been sent to Geofond at all, due to flawed legislation.

The numbers of loans of reports and assessments, as well as the number of visitors (14 per day) corresponds to the average from the years 1992-1998. To assist the visitors, we have enabled access to the documentographic database ASGI in the terminal room. The database is also accessible on the Internet.

In 1999, Geofond received material documentation to 34 new drill cores. We have stored merely 3 drill cores because the majority of the samples from Ostrava and Brno (Unigeo) arrived only toward the end of the year. We continued to replace old core boxes with new ones (type CH I; done for 23 cores in 1999). Out of a total of 1,310 documented objects (mainly cores), 1,133 cores have been transferred to boxes CH I. The remaining 188 cores are kept in storage facilities Kamenná and Chotěboř.

In 1999, the material documentation was used by 4 researchers (Czech Academy of Sciences - 2, Faculty of Science, Charles University - 1, and one scientist from Canada). A total of 18 drill cores were investigated and 18 subsamples taken for further scientific evaluations.

Summary of activities of the Material Documentation Unit

Year	number of	stores drill	number of	number of suggestions
			filled boxes	to discard cores
1982	12	793	181	131
1983	43	836	221	114
1984	34	870	173	106
1985	5	875	209	116
1986	12	887	149	133
1987	12	899	201	93
1988	16	915	187	88
1989	24	939	706	99
1990	31	970	347	84
1991	38	1.008	320	54
1992	43	1.051	579	87
1993	24	1.075	420	19
1994	74	1.149	435	9
1995	42	1.191	200	16
1996	47	1.238	138	14
1997	34	1.272	224	3
1998	5	1.276*	234	2
1999	34	1.310	350	7

* the number was reduced by 1 (discarding and pooling)

Center for Documentation of Gold Deposits (Detachment of Geofond)

The Center is housed in the Regional Museum in Jílové near Prague, which specializes on the history of gold mining in the Czech Republic. The Center was established in 1994 in response to the need to gather all documentation resulting from state-funded gold exploration projects that culminated in the 1980s. It was decided to locate this Center into a Museum where primary and material documentation had been previously stored from the Jílové gold-bearing district. Gold exploration and exploitation at Jílové ended in 1969.

The Center collects primary geological and material documentation from exploratory and mining works, primary geological documentation to geological maps, and old maps of gold-bearing districts. The material documentation includes samples of minerals and ores taken during exploration and mining works, samples of rocks and rock alteration types, selected segments of drill cores (halved cores), thin sections of rocks and vein fillings, and polished sections with ore minerals. Storage is by localities. The collection currently consists of 5,500 specimens of minerals and rocks, 2,000 thin sections and 400 polished sections.

In addition to activities related to the project on processing of geological documentation from archives taken over by Geofond, we also provided selected documentation for research grants coordinated by the Faculty of Science, Charles University and by the Czech Geological Survey. We collaborated with the Organizing Committee of the World Championship in Gold Panning Kocába 1999 in preparing an exhibit on gold mining history in the Nový Knín district.

Information Systems

The Documentographic Information System

The ASGI Database

In 1999, the number of records increased by 13,650 (there were 6,000 new records in 1998). The new records originated from both newly acquired reports (3,697) and archived reports (9,953). At the end of 1999, the ASGI database contained in all 115,048 records. A total of 15 searches for extramural and 20 searches for intramural users were performed (total of 24,611 records).

Based on instructions by the Ministry of Environment, Travel Reports by the staff of the Ministry and its research institutes were annotated and stored.

The GeoRef Database

The American Geological Institute, Alexandria, VA, USA was sent 350 records on newly acquired Czech (276) and Slovak (74) geological literature. This was an obligation resulting from a bi-lateral agreement.

The following CD-ROM GeoRef editions are available in Geofond: GeoRef 1785-1974, GeoRef 1975-1985, Geo-Ref 1986-1995, GeoRef January 1996 - December 1997, GeoRef January 1997- December 1998, GeoRef January 1998 - December 1999. The software used is SPIRS.

We responded to four requests by state-run organizations (Czech Geological Survey, Faculty of Science, Charles University, and Ministry of Environment). The output contained 998 records.

The Factographic Information System

Database of Boreholes

Similar to the previous years, in 1999 we focused on improving the quality of the Database by using all available control programs. We completed the conversion of the Database to the ORACLE system. This enabled inclusion of ca. 4,000 boreholes, which could not be included in the old environment. Data on these additional boreholes were revised and corrected.

We completed inclusion of data by the Military Project Institute into the Database of Boreholes. In 1999, we keyed in data from 193 reports on 567 boreholes. 575 reports on 2,225 boreholes were incorporated from the GMS archive. Out of the 7,716 newly coded boreholes, 7,314 were contracted from 36 subjects, while 402 boreholes were processed by external annotators and Geofond staff. A total of 9,724 boreholes were prepared for inclusion in the Database.

The actual size of the Database as to December 31, 1999 was 589,590 boreholes. This is by 28,952 boreholes less than entered. The difference is represented by redundancies (duplicate information on the same boreholes).

Time trends in the numbers of annotated and stored boreholes

Year	annotated boreholes		stored boreholes	
	per year	total	per year.	total
1976	4 055	4 055	-	-
1977	4 803	8 858	2 095	2 095
1978	8 257	17 115	3 059	5 154
1979	5 098	22 213	10 639	15 793
1980	9 147	31 360	8 220	24 013
1981	13 840	45 200	5 816	29 829
1982	42 331	87 531	17 167	46 996
1983	43 782	131 313	43 351	90 347
1984	48 812	180 125	47 898	138 245
1985	51 819	231 944	46 556	184 801
1986	60 378	292 322	53 903	238 704
1987	60 089	352 411	52 414	291 118
1988	52 243	404 654	55 124	346 242
1989	54 285	458 939	60 200	406 442
1990	58 927	517 866	50 713	457 155
1991	24 926	542 792	48 971	506 126
1992	14 107	556 899	21 706	527 832
1993	11 872	568 771	14 618	542 450
1994	9 701	578 472	6 725	549 175
1995	12 725	591 197	20 679	569 854
1996	10 647	601 844	11 953	581 807
1997	11 138	612 982	13 628	595 435
1998	8 692	621 674	13 387	608 818
1999	7 718	629 392	9 724	618 542

The table shows a decrease in the numbers of annotated and stored boreholes in the most recent years. This decrease was caused mainly by the completion of storing of archived boreholes in 1990. In 1994, work on improving the structure of the database caused a delay in entering new data. In 1998 and 1999, a drop in the numbers of geological and exploration projects resulted in low numbers of project reports sent to Geofond.

There were fewer clients interested in the Database of Boreholes compared to 1998, but their number was still the second largest in the past eight years. Data from the Database of Boreholes were also abundantly provided to state administration in the form of maps of locations of drillings (environment GIS ARC/INFO). These data were provided upon request to four District Councils (10,225 boreholes).

Usage of the Database of Boreholes

Year	Number of clients	Number of boreholes
1984	87	45144
1985	142	81554
1986	163	155739
1987	133	77960
1988	75	84435
1989	121	116978
1990	97	78919
1991	126	155710
1992	75	81472
1993	51	44922
1994	48	46391
1995	76	36180
1996	79	10009
1997	67	20972
1998	118	67311
1999	94	62293

Database of Hydrogeological Objects

In 1999, a total of 1,235 objects were entered into the Database (1,082 from 973 new reports, and 153 from archived reports). As of December 31, 1999, this Database contained 54,739 objects.

In 1999, 564 hydrological maps on the scale 1: 25,000 were on loan to 208 customers, 2,135 hydrosheets were loaned. Data on 54,847 objects were provided to users on floppy discs, of these a mere 1.25 per cent was charged.

A specialized Database of Potential Geothermal Energy Sources is part of the Database of Hydrogeological Objects (1,041 entries).

A specialized Database of Objects Aimed at Study of Anthropogenic Influences on Ground Waters contained: 7,420 indicatory wells, 1,244 remedial wells, and 3,862 monitoring wells.

Database of Past Hydrogeological Projects

There were no changes in this Database in 1999 since no regional hydrogeological surveys are under way. The Database contains 613 objects with calculated reserves of drinking water.

Database of Protected Zones Surrounding Spas and Mineral Springs

In 1998, Geofond obtained from the Ministry of Health Service contours of protected zones of spas and mineral springs, digitized from maps on scale 1:10,000, plus spas characteristics. This Database consists of 106 protected zones surrounding spas and 5 protected zones surrounding mineral springs. On a reciprocal basis, we passed to the Ministry of Health Service complete data on 5,639 hydrogeological objects.

Database of Undermined Areas

No new data on undermined areas could be obtained from research reports arriving in Geofond in 1999. The Database did not change and contained, as of December 31, 1999, 4,605 objects. This database will be extensively updated in 2000-2003 in relation to the newly developed Database of Main Mining Works. We have provided outputs from the Database of Undermined Areas to 26 users (26 maps on scale 1:50,000, information on 7,221 objects).

Database of Main Mining Works

Already in 1998, the necessity to set up such a database became obvious during negotiations between the Czech Mining Bureau, Department of Mining of the Ministry of Industry and Commerce and Department of Geology of the Ministry of Environment. The project "Compilation of a Database of Main Mining Works" was approved by the Ministry of Environment on June 25, 1999. In 1999, we managed to collect data on 2,657 objects. Between 2000 and 2003, the database will be extended and linked to the Database of Old Mining Works and Database of Undermined Areas.

Database of Old Mining Works

In 1999, 99 cases of dangerous surface manifestations of underground mining were investigated. Based on instructions by the Ministry of Environment, experts from Geofond participated in 46 on-site investigations, controls of safety measures and meetings concerning old mining works. For the Ministry of Environment, the Database was updated as of February 15, 1999. As of December 31, 1999, we received 546 notifications on 938 mining works. Out of these, 800 old mining works are registered as such in compliance with the law.

Database of Landslides and Other Dangerous Slope Deformations

In 1999, we completed an extensive update of this Database using new data from reports on the disastrous floods in Moravia (1997) and East Bohemia (1998). 30 new objects were recorded, information on 38 other objects was updated. The Database consists of 6,628 objects. 33 orders were processed, 273 maps on scale 1:50,000 were provided, along with information on 11,130 objects.

Database of Radiometric Anomalies

No changes were done in database during 1999. The Database contains 15,960 objects. We started to prepare baseline information for the Institute of Geochemistry, Mineralogy and Mineral Resources, Faculty of Science, Charles University, which will be used in planning geochemical mapping courses co-organized by the Institute of Endocrinology. In exchange, Geofond will obtain the results of gamma spectrometric measurements and emanometry on selected sites. These data will be appended to the existing Database. More data will be provided to the University in 2000.

Database of Radiometrically Anomalous Territories

No changes in 1999. The Database contains 3,420 objects. Digitized maps are on offer to District Councils as part of GIS packages.

Information System on Raw Materials

All sub-databases were continuously updated in 1999. At the end of 1999, the system contained:

- **Register of Mineral Deposits** : 8,609 objects.

Of these:

- 1,657 state-controlled deposits with calculated reserves (Subregister B)
- 473 uncontrolled registered deposits (Subregister D)
- 1,072 deposits without calculation of reserves (Subregister N)
- 165 approved prognosed resources (Subregisters P and R)
- 1,055 other prognosed resources (Subregister Q)
- 1,382 mineral occurrences and areas where exploration revealed industrial minerals in negligible recoverable amounts (Subregister V)
- 2,805 cancelled deposits (Subregisters Z and U).

- **Register of Protected Zones Surrounding Deposits**
1,079 objects, of these 825 in effect, 354 cancelled.
- **Register of Limits of Mining Operations**
1,115 objects, of these 1,049 in effect, 66 cancelled.

- **Register of Permits to Delineate Mining Operations**
455 objects, in 1999 data on 190 objects were updated in relation to the transfer of responsibilities to the Regional Departments of the Ministry of Environment.
- **Register of Past Geochemical Projects**
710 objects.
- **Register of Past Geological Mapping Projects**
9,135 objects – geological maps on various scales.
- **Register of Graphic Objects**
Common for all Registers with the exception of the Register of Past Geological Mapping Projects
15,389 objects, closed, as well as open polygons, point locations plus coordinates of boundaries of all administrative regions of the Czech Republic.

All these Registers are regularly updated. Our data sources are namely:

Annual Statistical Statements Geo (Ministry of Environment) V3-01
 results of the project Re-evaluation of deposits of state-controlled minerals
 results of the project Re-evaluation of prognosed resources
 approvals of reserves
 documents on state-controlled deposits
 decisions on cancellation of reserves
 documents on changes in permitted spatial limits of mining operation
 decisions on establishment/cancellation of protected areas surrounding deposits
 final reports on exploration.

- **Administrative Registers**

⇒ Register of Companies

Data on 2,064 organizations performing geological work, exploration for mineral resources and mining. Of these, there are 1,546 active companies (submitting annual statements on geological works). The remaining companies either do not currently exist or do not file documents in Geofond.

⇒ Register of Personal Licences to Perform Geological Works

1,464 licences, of these 657 unexpired.

⇒ Register of Geological Works

330 new registration sheets processed in 1999.

Register of Projects Financed by the State

1,613 projects; data from 1999 not yet digitized.

⇒ Register of Rulings on Reserves

In 1999, update of already registered rulings only. The Register contains data on 2,529 objects.

Summary of Outputs from all the Databases in 1999

	Number of orders	Charged	Free of charge
Total	826	1 176 251,-	1 094 657,-
➤ For state administration	350	905 200,-	829 457,-
● Ministry of Environment	34	500,-	46 982,-
● Czech Geological Survey	36	* 50 000,-	225 805,-
● Ministry of Industry and Commerce	16	600 000,-	93 300,-
● Czech Mining Bureau	2	0,-	2 905,-
● Ministry of Education	19	0,-	101 065,-
● Ministry for Regional Development	7	226 000,-	12 175,-
● Ministry of Health Services	3	0,-	17 100,-
● District Councils	216	28 700,-	319 925,-
● Land Fund	17	0,-	10 200,-
➤ Other users	471	271 051,-	261 700,-
➤ International institutions	5	0,-	3 500,-

* transferred to Geofond budget

Compared to previous years, in which free planned and *ad-hoc* service to state administration dominated, paid service slightly prevailed in 1999 for the first time. This was primarily thanks to contracts with the Ministry of Industry and Commerce (processing of Statements Hor 1-01) and Ministry for Regional Development (provision of GIS data for large-scale territorial planning).

COMPILATION OF SPECIALIZED MAPS

Maps with Special Geological Features

Approximately once every three years, Geofond publishes maps on scale 1:50,000 depicting areas with special geological features, such as protection of mineral deposits, landslide hazards and undermined areas. These maps are necessitated by Section 13 of law no. 62/1988 Coll. (Czech National Council). According to this law, Ministry of Environment is obliged to provide state administration bodies with the results of geological works that potentially could affect territorial planning and environmental protection. These maps are passed to Regional Departments of the Ministry of Environment and Detachments of the Ministry for Regional Development and through them delivered to District Administrations and Building Offices. The maps are also available in the reading room of Geofond for in-house use. Location of objects is given on copies of topographic background (1:50,000). Basic data on objects shown in the maps are given in tables.

In 1999, we published maps of protection of mineral deposits for the regions Plzeň, Chomutov, Liberec and Hradec Králové. The maps already take into account

results of the projects "Re-evaluation of deposits of state-controlled minerals in the Czech Republic" and "Re-evaluation of prognosed resources". Also considered was a revision of measures to protect state-controlled deposits carried out by the Regional Departments of the Ministry of Environment.

A new edition of maps of landslides and other dangerous slope deformations started with the regions Ostrava, Olomouc and Brno. The maps follow a thorough revision of the relevant Register in which verified geodynamic phenomena accompanying the floods of 1997-1998 were included. Application of up-to-date GIS technologies (GeoMedia Desktop, IPLOT, and Access) enabled inclusion of colored topographic background provided by the Geodetic Survey. As a result, the quality and information potential of the maps increased significantly. In the future, the new technology will be applied to all maps issued by Geofond in compliance with Section 13 of law no. 62/1988 Coll. (Czech National Council).

The latest edition of maps of undermined areas was completed in 1997 and, due to a small number of changes, no new version is currently planned.

Further Large-Scale Maps

In 1998, a series of maps of past drilling projects (scale 1:25,000) was completed. Location of drillings is printed on transparencies, which can be placed on other maps of the Gauss-Krüger layout. Further work on transparencies was substituted with an Internet application in 1999.

As to November 1, 1997, a series of maps on preserved material documentation using geological contours or transparencies (1:200,000) was completed. No revisions in 1998 and 1999.

As to December 31, 1997, a series of transparencies on the extent of past geological mapping projects was issued. These transparencies are complementary to Gauss-Krüger maps on scale 1:200,000. No revisions in 1988 and 1999.

All these maps are available in the reading room of Geofond for in-house use.

Digital Maps

In recent years, we provided up-to-date signal information in the form of vector maps and GIS for use in local information systems. "Signal information" is a simple tool to draw attention to the existence of a particular object in a given area. In 1999, we translated our data to GIS and provided them to 9 District Councils. In addition, the Ministry for Regional Development obtained geological information covering the entire territory of the Czech Republic for the purpose of building an information system for the newly established administrative regions.

Intranet of Geofond now offers maps of past drilling projects, landslides, undermined areas, mineral deposits, limits of mines, protected areas surrounding mineral deposits, protected zones of spas, large and small natural preserves, national parks and CHOPAV. Topographically, these maps contain selected layers of ZABAGED2 obtained from the Ordnance Survey.

Since late 1999, the map of past drilling projects is freely accessible on the Internet.

3. Scientific Research

Traditionally, research in Geofond is oriented toward introduction of new computer technologies into geological informatics.

In 1999, the project "Unified system of geological, hydrogeological, geochemical and geophysical databases in relation to the Database of Boreholes", which started in 1998, underwent an extension recommended by the 957th Session of the Commission for Projects and Final Reports and continued under a new title "Complex Information System of Geofond of the Czech Republic". This modified project integrates also other subsystems into a unified interactive database.

The extension of the project led to initiation of work on inclusion of the documentographic database ASGI, the Information System on Mineral Resources (SURIS), and the subsystem of geologically documented phenomena (GDJ) into the unified database. We completed conversion of data at the level of objects, and geological/hydrogeological characteristics from their source databases into the Complex Information System. A number of applications for the maintenance and transfer of data were created. Much attention was paid to WWW. A new version of the web home page of Geofond was produced in Czech and English. Signal information can be accessed using two different applications: (i) data on past drilling projects, geological and hydrogeological characteristics of objects, the documentographic database ASGI, and data on deposits and geodynamic objects can be accessed on the Intranet, (ii) data on past drilling projects and ASGI can be accessed on the Internet free of charge.

The project was extended to include processing of documentation from acquired archives. Drill logging databases set up in previous years were merged. In addition, geophysical logging data from 26 drillings of a regional survey from the archives of GMS were processed. We tested the technology of digitization of written and graphical documents. The results of the test were used in preparation of a new project "Integrated digital archive of Geofond". The objective of this project will be to supplement the ASGI database with scanned full-length documents.

We also prepared interactive database servers, installed new workstations, updated versions of software, developed safety policy for the Intranet, initiated change from platforms VMS and DOS to Windows 95/98 and Windows NT, and inventoried existing hardware and software.

4. Publications, Publicity

Based on the Publishing Plan, Geofond produced the following books in 1999:

- List of codes of the Register of Boreholes (Re-edition)
- Manual of the Hydrogeological Database
- Catalogue of acquisitions of geological documentation 4/1998 and 1-3/1999
- Annual Report of Geofond of the Czech Republic 1998

Geofond is in charge of one of the video-rental facilities of the Ministry of Environment. The video library contains 200 videos, mainly ecologically oriented, geology is less represented. In addition, 33 videos belonging to the ENvideo Foundation and seven videotranscriptions of geological films from the former Czech Geological Bureau are available. In 1999, 22 new videos were acquired. We also keep 55 documentary films on geological topics (360 copies). In 1999, a total of 89 videos were rented.

5. Literature Searches, Expert Assessments

- In November 1999, we published the report "Changes in reserves of state-controlled mineral deposits in 1989-1998". The booklet contains user-friendly summary tables on import/export of individual commodities and commodity coding according to the custody tariffs.
- In 1999, we produced 57 technical and expert assessments and literature summaries for both private and public organizations in the field of mineral resources.
- We prepared reports on occurrence of mineral deposits on land designated for substitutional restitutions by the Land Fund and sale of state-owned land in compliance with the law no. 95/1999 Coll. Preparation of these reports proved to be extremely time-consuming.
- In 1999, we prepared 129 expert assessments on the extent of undermining at specific sites within larger undermined areas and on the degree of cave-in hazards.
- In 1999, 520 expert opinions for the state administration project organizations and other institutions concerning protection of mineral deposits, groundwater resources, undermining and landslide hazards were prepared.

6. International Activities

Collaboration with the American Geological Institute, Alexandria, VA, USA continued on the basis of an Agreement on delivery of the GeoRef database on CD-ROM in exchange for an index of geological literature from Czech and Slovak journals (agreement closed on April 4, 1992).

In the field of mineral resources the international collaboration proceeded as follows:

- Provision of information on raw materials in the Czech Republic to international journals and for other publications (e.g., Industrial Minerals, Minerals Bulletin, EU papers published by Roskill Information Services). Exchange of the publication "Raw Materials of the Czech Republic – Mineral Resources" for international publications.
- Regular systematic exchange of materials and consultations with the U.S. Geological Survey, Mineral Resources Section.

A Geofond representative presented invited lecture at a workshop of IT managers from European and selected non-European Geological Surveys held in May 1999 in Delft, the Netherlands, in the framework of ICGSECS. The purpose of the meeting was to coordinate the activities of individual participants in the field of information technology and to continue the efforts of GEIXS started in 1998.

The two-year project "Environmental geology of land affected by mining – implementation of data systems for use in planning reclamation and development" held a second annual meeting in Keyworth (Nottingham) and Exeter, England in September 1999. Geofond participated together with the Czech Geological Survey, the District Council Píbram and the British Geological Survey.

The Polish Academy of Sciences invited Geofond representatives to Cracow to a meeting of the International Consultation Group for the World Statistics of Ore Mining and Metal Production (September 1991).

In November 1999, Geofond representatives visited the Lithuanian Geological Survey in Vilnius. The objectives of the visit were consultations and exchange of experience in building and running information systems in geology.

Representatives of Geofond and the Czech Geological Survey participated in the seminar "The future of Geo-referenced Information Exchange in Eastern Europe and the NIS Area: The Third GEIXS (ESPRIT) Workshop" held in December 1999 in Budapest. The meeting was co-organized by EuroGeoSurveys. The sessions focused on the progress in implementation of GEIXS, the Geological Electronics Information eXchange System.

7. Economic Results of Geofond in 1999

Geofond had an equivalent of 74 full-time employees in 1999. This amounted to 87% of the set quota of 85 employees.

The total volume of means allocated for salaries (11,865 thousand Czech crowns) was fully utilized. The mean salary increased by 14.8 % relative to 1998, and amounted to 13,142 crowns per month. The average salary bracket number of all Geofond employees did not change since 1998 and was equivalent to 8.3.

The budget for non-investment expenses was 40,724 thousand crowns; 40,580 thousand crowns, i.e., 99.65 % of the total, were actually spent.

The highest expenses were those for services purchased from other institutions, especially subcontracts within geological exploration projects financed by the state (19,006 thousand crowns). Of these, 2,506 thousand crowns went toward Re-evaluation of state-controlled deposits, 4,628 thousand crowns toward Specialized Databases of the Register of Mineral Deposits, 421 thousand crowns toward Complex processing of geological documentation, 4,505 thousand crowns toward the Complex Information System of Geofond, and 219 thousand crowns toward the Database of Main Mining Works.

Due to an increased sum for salaries, also the volume of means paid back to the state in the form of mandatory social and health insurance increased (4,063 compared to 3,593 thousand crowns). There was an increase in phone and mailing expenses (586 compared to 410 thousand crowns). This increase was caused by increasing postage and phone rates and by connection to a digital switchboard. There was a moderate increase in utility bills (803 compared to 737 thousand crowns), maintenance and repairs (1,469 compared to 933 thousand crowns; includes also maintenance of computer network, copying, repairs of newly acquired storing space, anti-radon measures, and works in the facility Chotěboř). There was also a moderate increase in the cost of petrol (80 compared to 56 thousand crowns). The number of kilometers (9,571 km) increased by one third relative to 1998. Most trips went toward "Complex processing of geological documentation taken over from abolished archives", "Compilation of the database of Main Mining Works", moving of the archives of Geindustria GMS to Kamenná and Kovanice, preparation of take-over of archives outside Prague containing state-financed data, preparation of Statements Hor (Ministry of Industry and Commerce) 1-01, and participation in investigations of reported earth subsidence in undermined areas. Due to purchase of new company cars in 1998, the overall travel expenses decreased slightly (by 1,283 crowns; there were fewer repairs and lower consumption of petrol - by 1 L per 100 km).

The expenses for material supplies and small equipment were lower (1,792 compared to 2,049 thousand crowns). Travel expenses using public transportation also decreased (135 compared to 235 thousand crowns).

The means allocated for investments amounted to 5,300 thousand crowns. Of this sum, 5,296 thousand crowns were actually spent. 3,556 thousand crowns went toward the reconstruction of a multi-functional storage facility (to be completed in

2000; storage of archived materials already started). Further funds were used to complement the system of computer servers, graphical stations and purchase of more computer terminals (940 thousand crowns).

Movable shelves for the archive in Kostelní 26, Prague were purchased and installed (798 thousand crowns).

Prior to 1999, Geofond was unable to fulfill the planned income for several years. In 1999, the planned income was slightly exceeded. As a result, it was not necessary to reduce the planned expenses. The income amounted to 1,780 thousand crowns, which represents a 61 % increase relative to 1998. Nearly one half of the income comes from state administration (data collection and processing, Ministry of Industry and Commerce, and building of an information system of the Ministry for Regional Development). Users from the commercial sector were more interested in cheaper services (loans and copying) than in more expensive outputs from our information systems, which probably reflects austerity measures taken by business managers.

The budgetary deficit of Geofond was planned as 44,724 thousand crowns. Because the incomes were somewhat exceeded, the actual deficit (44,069 thousand crowns) was lower than planned by 628 thousand crowns.

8. Organizational Structure

The organizational structure, in effect from September 1, 1998, remained largely unchanged in 1999. Some workers were transferred between individual units of the Department of Mineral Resources in order to intensify certain activities. Planned numbers of employees are given in brackets.

100 DIRECTORATE (15+1)

110 Secretariat and Offices subordinated directly to the Director (2).

Coordinates agenda linked with the responsibilities of the Director. This unit includes the Secretariat, Staff Department, Auditing, and Office of Foreign Affairs, Legal Department, Civil Defense, Fire Prevention Office, Safety of Operation and Health Protection. Existence of some of this agenda is necessitated by the law. Some activities are performed on contract. This unit is also responsible for editorial policy of Geofond.

120 Department of Information Systems (12+1)

121 Computer Services (2)

Maintain the local computer network (Intranet), look after computer operation systems and hardware, inventory computers and software, coordinate requests for new computer equipment, periodically make back-up copies of databases and operation systems which are archived, ensure data protection against unauthorized users and take responsibility for connection of Geofond to higher-level information systems (SIS, Intranet of the Ministry of Environment, Internet).

122 Unit of Operation and Development of Computer Systems and Applications (5)

Ensures development, maintenance and updating of methodology for the information system of Geofond (indexes, coding manuals, operation manuals). Implements new systems, maintains software for running databases, develops software applications, maintains programming and user's documentation, organizes training of employees, implements new technologies (WWW, GIS) and uses these technologies to simplify user access to databases, supervises building of the Complex Information System of Geofond, supervises compilation of external specialized databases and information subsystems, oversees inclusion of these subsystems into the Unified Information System, provides information on specific usage of Geofond's Information System, provides non-standard outputs from databases, coordinates research projects in geoinformatics.

123 Unit of Data Processing (5)

Responsible for acquisition of input data, including digitization, provides standard outputs from databases, collaborates on maintenance and updating of individual databases of the Information System.

200 DIVISION OF THE DEPUTY DIRECTOR FOR ECONOMY

In charge of all activities necessary for the smooth functioning of the organization. The Deputy Director for Economy manages the budget, supervises civil defense, fire protection, presides over the investment panel, and supervises building activities and purchase of machinery and equipment.

210 Department of Economy (4+1)

Carries out complex payroll agenda and invoicing, registers orders and contracts, controls the financial fluxes within these contracts, prepares statistical statements,

runs an accounting information system, is responsible for the budget, implementation of software for accounting and operation, performs money transfers, ensures cash payments, calculates travel expenses, destructs accounting papers and other old documents.

220 Department of Operation (7+1)

Administers assets, takes inventories of property and equipment, prepares contracts on property lease, manages the use of telephones, radio, television, water, electrical energy, and the payment of municipal fees, oversees utility payments and prevents budget excess, supplies with material, ensures maintenance of buildings, office equipment, technical equipment, destructs old equipment, organizes revisions of selected technical appliances and repairs, supervises company cars, night guards, switchboard and fire alarms.

300 DIVISION OF THE DEPUTY DIRECTOR FOR GEOLOGY (54+1)

Responsible for all activities of the technical departments, collaboration with the Geology Department and Regional Departments of the Ministry of Environment in the field of geoinformatics and ecological aspects of territorial planning. Performs manuscript compilations on past geological projects, special geological phenomena, protection, contamination and destruction of bedrock, conflicts of interest between mineral exploitation and environmental protection.

310 Department of Geological Documentation (16+1)

311 Unit of Basic Funds (9)

Collects, stores and preserves written and graphical documentation. Provides reprographic services. Participates in destruction of unnecessary documents and rock samples. Collects and preserves material documentation and makes it accessible.

312 Unit of Documentography (7)

Performs annotation of unpublished reports and enters data into the documentographic database ASGI; maintains and regularly updates the ASGI database, publishes lists of acquisitions of geological documents, registers newly started geological works in compliance with Ordinance no. 8/1989 Coll., compiles data on Czech-written geological literature for GeoRef, runs video rentals, updates thesauri.

320 Department of Factographic Information (19+1)

321 Unit of the Database of Boreholes (7)

Builds, maintains and updates the Database of Boreholes, Database of Radioactive Anomalies and Database of Radioactively Anomalous Areas.

322 Hydrogeological Unit (7)

Builds, maintains and updates the Database of Hydrogeological Objects, Groundwater Pollution (Indicative wells), Geothermal Energy, Mineral Springs and their Zones of Protection, Zones of Protection Surrounding Spas, Water Resources and Past Hydrogeological Projects.

323 Detachment Kutná Hora (5)

Directly subordinated to the Deputy Director for Geology. Runs the Register of Old Mine Workings, collaborates with the Ministry of Environment and its Regional Departments on registered mine workings in compliance with the Mining Law and Public Notice no. 363/1992 Coll. by the Ministry of Environment. Maintains historical documents on mining, produces expert opinions on hazards related to undermining and geodynamic phenomena. Builds, maintains and updates the Database of Undermined Areas and further specialized databases dealing with mining in the historical perspective. Runs the Database of Landslides and Other Dangerous Slope Deformations.

330 Department of Mineral Raw Materials (16+1)

Provides services related to administration of projects aimed at exploration for mineral deposits, as requested by the Geological and Mining Law. As a rule, the end-users are the Ministry of Environment and Ministry of Industry and Commerce. Provides support to endeavors to protect, develop and use mineral resources. Provides information for the development of new geological projects and for the formulation of State Policy on Raw Materials. Maintains and updates the Factographic Information System on raw materials, provides textual and graphical outputs from subregisters of this Information System and performs commissioned manuscript summaries and literature surveys from public and restricted sources.

331 Management of Geological Resources (5)

Registers deposits forming the state reserves and ensures protection of these deposits. Maintains archives of rulings of the former Commission for Rating of Reserves, rulings on reserves by the Ministry of Environment, rulings on cancellation of reserves by the Ministry of Industry and Commerce, certificates of state-controlled deposits, decisions on protected land surrounding deposits, further documents on state-controlled deposits in compliance with the Mining Law, drafts on establishment

and changes in the protected land surrounding deposits in cases registered and managed by Geofond. Maintains the Register of Protected Areas Surrounding Deposits, Limits of Mining Operation, Preliminary Mining Permits, Exploration Licenses, Licenses to Carry out Geological Work, and Geological and Mining Companies. Prepares basic documents on cancellation of reserves for the relevant Commission of the Ministry of Industry and Commerce. Collaborates with the State Mining Bureau, provides information related to administrative documents, participates in state-financed projects aimed at changing quantitative and qualitative parameters of reserves resulting from economic trends.

332 Information Services on Mineral Resources (5)

Updates information systems on past mineral exploration projects in the Czech Republic, maintains the Register of Mineral Raw Materials in all its parts: state-controlled deposits with calculated reserves (subregister B), uncontrolled registered deposits (subregister D), deposits without calculation of reserves (subregister N), approved prognosed resources (subregisters P and R), other prognoses resources (subregister Q), and mineral occurrences and areas with industrial minerals in negligible recoverable amounts (subregister V). Calculates reserves of state-controlled deposits, registers reserves of uncontrolled deposits, compiles maps of protection of deposits for individual regions in compliance with the Geological Law. Provides outputs, including graphical, on the raw material basis of the Czech Republic to central bodies of state administration, the State Geological Service and businesses. Uses GIS at a specialized workplace, prepares compilations of data from unpublished reports. Maintains the Registers of Past Mapping and Geochemical Projects. Participates in state-financed projects aimed at extension of the information basis on mineral deposits, runs archives of registration sheets of mineral deposits and Statistical Statements GEO (Ministry of Environment) V-3/01. Updates lists of numeric codes of mineral deposits on the territory of the Czech Republic, delivers these codes to the Complex Information System of Geofond.

333 Unit of Raw Materials Policy

Prepares statistical evaluation of imports and exports of industrial minerals, follows prices of selected commodities both in the Czech Republic and at foreign commodity exchanges, prepares regular basic documents for the Department of the Raw Materials Policy of the Ministry of Industry and Commerce. Prepares the publication of specialized booklets: Raw Materials of the Czech Republic – Mineral Resources, Securing the Czech Republic with Industrial Minerals, Quantification and Changes of Reserves of Mineral Raw Materials in the Czech Republic, and Summary of Pricing of Mineral Raw Materials in the Czech Republic. Participates in international collaboration in the field of mineral raw materials and pricing.

334 Unit of the State Geological Service (2)

Provides complex statements for developers in compliance with the Building Law and Ordinance no. 5/1987 Coll. Operatively responses to requests addressed to the state Geological Service, builds a database of areas affected by mining and reclaimed areas in the Czech Republic.

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