December 30, 1993

MEMORANDUM FOR: John Becker, USAID

FROM: Jon Abrams, BLM
Thomas Deiling, BLM
Charles Challstrom, NOAA

SUBJECT: Trip Report--Bucharest, Romania and London, U.K. December 13-20, 1993, including Evaluation and Recommendations re Surveys for Privatization of Romanian Lands

This assignment was for gathering and analyzing information relative to a U.S. Agency for International Development (USAID) assistance program to expedite the transfer of Romanian lands from public to private ownership. Factors examined included:

1)existing capabilities and resources within the Romanian professional surveying community;
2)existing options for best uses of approximately $5 million in available Romanian funds (lei) to support the program;
3)the status of Romanian national cadastre legislation;
4)the status of Romanian legislation to declassify use of the highest accuracy geodetic network;
5)the viability for a GPS-controlled photogrammetry project;
6)the possibility for using private entities for surveying and mapping;
7)a proposed joint venture for Bucharest centralized surveying and mapping office;
8)future U.S. Government multi-agency assistance, and
9)other related issues.

## Executive Summary

The process to issue titles for private land ownership is moving, albeit slowly. Segments of the process can be accelerated, and there is a good resource of talent and determination in Romania to solve the problems. Our report provides details for the following recommendations:

- Procure additional vehicles ($1 million) and survey and computer support equipment ($4.3 million) for the judet cadastral offices;
- Initiate efforts to expand surveying capabilities in the Romanian private sector ($0.5 million);
- Provide surveying training and assistance in three judets as prototypes for field-to-finish models (initially for classical techniques, eventually for GPS survey techniques) with participation of government and private sector through interagency agreements with U.S. Government agencies; and
- Continue to work on institutional issues that inhibit good governmental cooperation and long-term economic stability.

Itinerary and Contacts

Our itinerary included meetings with representatives of various Romanian national and local agencies in Bucharest, the academic faculty, the Romanian private sector, USAID in Bucharest, senior officials at the U.S. Embassy in Bucharest, EC PHARE, Volunteers in Overseas Cooperative Assistance, and other consultants. We also traveled to Tîrgovi_te to visit a judet cadastral office and assess the situation outside of Bucharest. Our stop in London permitted a meeting with John Leatherdale, consultant to the World Bank and EC PHARE. A listing of organizations and contacts is provided in **Attachment A**.

1) Capabilities within Romanian Surveying Community

Our contacts with numerous individuals and interested parties were enlightening, and it is apparent that **there is a high level of education, knowledge, and potential capability within the Romanian professional surveying community**. What is lacking are the tools to do the work, an updating in technology advancements, hands-on experience, and facilitated work flows for field to finish, i.e., from parcel design, to field survey, through title issuance.

Contemporary surveys in support of land privatization in the next few years should be done principally by Romanian government survey offices since there are few private domestic companies and more importantly, the adjudicative problems within the local land commissions. Also, in view of the existing high level of surveying expertise in Romania, and in conjunction with the immediate availability of professionals and technicians, **it is neither necessary nor advisable to bring in extensive outside assistance from other countries**. A limited number of outside advisors and trainers should be sufficient. However, a Romanian private surveying effort should be initiated for which a recommendation is included in the latter part of this report.

2)Use of Romanian Support Funds

The Romanian survey offices (in each judet) have begun using the 170 Zeiss Total Stations supplied through EC PHARE, approximately four Total Stations for each judet. These supplement use of classical survey equipment, e.g. theodolites and tapes. Based on our evaluation, **the Total Stations are only used at maybe 20% of their capacity**, and the following factors limit the effective use of this equipment and delay issuance of final land titles:

a)Generally only one vehicle per judet is available to shuttle the four Total Stations and necessary surveying personnel between survey locations;
b)Software purchased by EC PHARE to support the Total Stations was

not initially compatible and still cannot provide a complete range of diagnostic functions;

c)Total Station data is recorded on media that must be brought to the judet office for transfer to a computer each night;

d)Computers within the judet office are insufficient in number to support effective data processing, evaluation, and archival; and

e)Plotters and laser printers are needed to produce needed survey diagrams and certificates of land title.

To equip Romanian survey offices (in each judet) with appropriate means to accomplish field and office work, major procurements of vehicles and field instruments/computers and plotters were explored. Although we heard in the Bucharest USAID office that vehicle purchase was not feasible at this time, our evaluation is that this is the single most important factor that limits effective use of all survey equipment. **At least 80 to 100 vehicles are needed to accelerate the land title surveys.** We understand that 100 Chrysler engines are being held in Istanbul, and that perhaps these can be installed in Romanian 4-wheel-drive vehicles and meet American-origin equipment requirements. **The vehicle purchase should total approximately $1 million.**

During discussions with Mr. Dimitru Benea and other survey officials in Bucharest, and through discussions with personnel in Tirgoviste (cadastral office of Dimbovita Judet), we have determined that a major acquisition of field instruments, automation equipment, and supplies in the attached summary (**Attachment B**) are appropriate. **The equipment purchase should total approximately $4.3 million.**

Acquisition of these items will not only significantly improve the Romanian capability to support land privatization, but will also assist with privatization of surveying functions as the surveyors and technicians acquire concurrent technology and working skills with training from outside surveyors. Mr. Dan Nicolau (EC PHARE) indicated that this proposed acquisition will not conflict with EC PHARE plans to furnish some similar items. This equipment will also support effective use of GPS surveying when that can be implemented to further accelerate the land title process.

3)<u>Status of National Cadastre Legislation</u>

We were asked to assess progress on legislation in the Romanian Parliament to establish a National Cadastre, including possible consolidation of the Romanian governmental surveying and mapping functions, and authorization of private land sales of agricultural lands. We heard about various drafts and various provisions of importance to particular sectors. But our overall conclusion is that our assistance should not wait for passage of such legislation. The most critical activity is implementation of legislation passed in 1991 that dictated return of land to private ownership, a necessary

element for political and economic stability.

4)Status of Declassification Legislation

We were asked to assess progress on legislation in the Romanian Parliament to declassify the highest accuracy geodetic control and allow civilian use of these survey control points. This access to geodetic control was made a prerequisite in February 1993 for NOAA's assistance with implementation of GPS for accelerating land surveys. We learned from a variety of sources that this declassification legislation might pass "in a month or two." We suspect that progress on this legislation is somewhat dependent on resolution of a data exchange agreement between the Romanian military and the U.S. Defense Mapping Agency, reportedly expected in January or February.

After declassification legislation passes, we anticipate that GPS can be used to accelerate survey control and parcel delineation. At that point, the cadastral survey offices needs must focus on procuring GPS receivers and obtaining training in ground-based GPS reconnaissance, data collection, processing and analysis. The use of GPS would include static and kinematic techniques allowing rapid positioning of parcel corners.

An important aspect of the GPS activities could be the use of Continuously Operating Reference Stations (CORS). The CORS are stations of the geodetic network with permanently operating GPS receivers that allow cadastral surveyors with other GPS receivers to provide efficient ties to the network. Possibly eight to ten CORS sites, at selected judet cadastral offices, would provide sufficient survey control for all of Romania.

Declassification of the geodetic network and implementation of GPS will also permit Romanian participation in crustal motion studies with international partners. Concerns for access to this data have been expressed by the Geodetic Faculty. Such work is vital to monitoring fault movement and maintaining an accurate geodetic reference system in this seismically active region.

5)GPS-Controlled Photogrammetry

After observing the land use patterns for agricultural lands, both from the ground and from the air, we question the utility of photogrammetry for any agricultural areas. The breakup of former State-owned farms is resulting in small strip parcels with little or no delineating features. With parcels as narrow as 3 to 5 meters, photogrammetry for delineation is not practical.

Photogrammetry in urban areas may be more useful as the land features are more stable and identifying. The use of GPS to control this photogrammetry may be more productive in that less persons are required to photomark the ground points, but this may not be a concern in Romania. Conventional photogrammetry may be appropriate for

these urban areas and for other specialized applications.

6)Privatization of Surveying

There are few private surveying businesses in Romania. Our discussions indicated approximately ten firms, while Mr. Leatherdale indicated approximately twenty in existence. Many of these businesses are quasi-private, meaning government surveyors moonlighting using government-owned equipment. The true private firms are very undercapitalized with limited ability to take on a government surveying contract of any magnitude. This obstacle can be overcome with up-front funding, allowing a contractor to procure necessary equipment and personnel.

A much larger obstacle to survey contracting is support of land privatization is the adjudicative role of the local village land commissions. Their arbitrative role in determining parcel ownership makes the determination of Scope of Work virtually impossible due to the ever evolving political makeup of the local commissions. This obstacle could be overcome within the three proposed regional demonstration centers, whereby study would determine which phase of the land privatization system could be successfully contracted. It remains our belief that this type of contracting would be a major stimulus for developing a private surveying sector. The cooperation of Romanian national surveying organizations will also be necessary to ensure eventual success.

Recommended steps for improving the privatization program and establishment of a private surveying community are:

a)Equip three regional demonstration centers and all judets with additional survey instrumentation and automated systems. The three regional centers would exemplify "Field to Finish" processing while simultaneously providing periodic systems training to the other judets. Since the other judets will have similar automated systems ready for use, there should be no loss of enthusiasm or learning retention on return to local offices.

b)Designate a U.S.-based project manager to coordinate, administer, and oversee implementation of the approved recommendations of this report. This project manager can be funded through one of the interagency agreements (IAA) with the U.S. Government agencies.

c)Provide working-level services of three land surveyors for the regional centers at intermittent intervals over a 2-year period.

d)Through the offices of the Patronatul Na_ional Român, identify potential private surveying firms. Then negotiate contracts directly with one or more Romanian surveying firms to work in the three judets. Up-front funding for equipment purchases will be necessary. The contractors can also receive the same training provided to government personnel in the regional

centers. **Estimated funding to support such contracts is $500K.**

e) To support a longer term contracting program, it is recommended that one private and one national government surveyor be sponsored by USAID to work in the BLM Alaska State Office for 1 year to observe and receive orientation to contracting procedures. Other means to ensure cooperation of the governmental survey organizations to implement contracting should also be explored.

f) Continue coordination with the World Bank and EC PHARE to maintain management oversight and for consultive and advisory expertise.

7) Bucharest Centralized Surveying and Mapping Office

We met with several individuals who proposed establishing a centralized office in Bucharest that would provide surveying and mapping services to the rest of Romania. The proponents, Dan Nicholae and Viorel Marin, described a joint venture involving selected individuals with prominent Romanian political connections and some U.S. firm, such a venture to be initially funded with the $5 million in Romanian currency, and then to become self-sustaining through sales of its products and services.

In order to emphasize their political connections, they arranged for us to meet with Prof. Gheorghe Vâlceanu, Prefect for the Bucharest Municipality and the surrounding agricultural region. We were also promised a meeting with the Romanian Minister of Defense in order to discuss the importance of GPS for this surveying and mapping venture. We kept the Army Attache at the U.S. Embassy informed on the possibility of this meeting, but it did not occur, reportedly because of an important vote in Parliament on the final Friday of our visit.

The proposal included plans for use of Hewlett-Packard (HP) Apollo workstations, and the proponents stated that they had already discussed such a purchase with HP's David Packard. They envisioned gathering all survey data and maps for Romania into one location with data management under a geographic information system (GIS). They stated that those who stood in the way of such an endeavor would be removed. They argued that such an arrangement would be more efficient than the distributed judet office approach, and that they have the support of the Romanian military because data would remain closely held and controlled.

While we might applaud an entrepreneurial spirit, we were cautious about any commitments for this approach. It appeared to be in direct competition with the Ministry of Agriculture and EC PHARE approach, and potentially in conflict with reported intentions of the draft National Cadastre legislation. Because we found a concern for the proponents' credibility with USAID officials in Bucharest, we suggested that they pursue their proposal themselves at the USAID office.

8)U.S. Government Multi-Agency Assistance

Training and professional assistance in the capabilities and use of the new equipment and systems is proposed to be accomplished through three regional centers (selected judets) which would also receive special attention as prototypes for field-to-finish models. Equipment would go to these centers first, with distribution to the remaining judets as training phases are completed. Hands-on working level trainers from outside sources would, over a 24-month period, provide the needed expertise for the centers, and occasionally for the other judets. The on-the-ground periods in Romania for these surveyors would be for 2 to 3 months, spread out over the 2-year duration.

The outside surveyors could possibly come from the U.S. Bureau of Land Management, NOAA's National Geodetic Survey, other U.S. Government agencies, private sector sources, other countries, or a combination of these sources. Financing for U.S. Government agencies can be via an InterAgency Agreement (IAA) with USAID. Funding for private sector sources could be via a grant from a U.S. Government agency to the American Congress on Surveying and Mapping (ACSM) which then provides individuals with specialized expertise with reimbursement at an hourly rate plus expenses. **We understand a total of $1.5 million (in U.S. dollars) is immediately available for this surveying training and assistance**.

The most immediate training and assistance must focus on use of classical surveying techniques, including the Total Stations. In anticipation of declassification and use of GPS, NOAA's National Geodetic Survey is prepared to assist Romania with establishment of CORS in Bucharest and at selected judet offices. These CORS sites would greatly accelerate local surveying efforts. A portion of the funding that is immediately available could be used to procure GPS receivers and support equipment necessary for CORS installation.

Outside management advice and consultation would also assist the Romanian government survey organizations during this project. Overall guidance for project management, quality assurance, and administrative factors could be available through the World Bank or EC PHARE, with frequent coordination and input from U.S. participants.

9)Other Related Issues

During the course of several meetings, and our field trip, it also became clear and evident that an additional major factor for attention is the delayed processing of title determinations for the estimated

35 to 50 million land parcels to be eventually transferred to private claimants. The problem of moving title actions through the many land commission authorities is involved and complex. It is not a problem caused solely by land surveys, although public opinion does not separate the privatization program into categories.

Tax consolidation comes into play since once title is issued for an individual's parcels, a tax payment requirement begins. Thus, there is sometimes a disincentive to have final title. It appears that Romanian legislative action may be necessary to correct this incentive problem.

In this land title process, there are higher court appeals, ownership determination reversals within the land commission, and other political and personal blocks. To identify the impacts of these problems and provide an overall perspective, a research project to improve and accelerate the titling process is recommended. A source for such institutional research could be the University of Wisconsin Land Tenure Center.

Other less demanding, but important factors are monumentation of the parcels and the preparation of a manual of national standards for accuracies, methods, and requirements. These factors need attention, but should not delay technical assistance and privatization efforts.

This was a challenging assignment, made easier by the good hospitality that we encountered everywhere. We are anxious to participate in follow-up activities.

Attachment A
Principal Contacts

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|---|---|
| Richard Hough<br>William Carter<br>Adrian Ciobanu<br>Marriana Stopescu | USAID<br>Blvd. N. B_lcescu, nr. 26, et. 5<br>Bucure_ti, Romania<br>tel: 40-1-312-0507 fax: 40-1-312-0508 |
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| Dr. Dan Floru<br>Lt.Col. John Markowicz | American Embassy<br>Str. Tudor Arghezi, nr. 7-9<br>Bucure_ti, Romania<br>tel: 40-1-312-4042 fax: 40-1-312-0395 |
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| Prof. Gheorghe Vâlceanu | Prefectura Municipiului Bucure_i _i Sectorului Agricol Ilfov<br>Blvd. M. Kog_lniceanu, nr. 27<br>Bucure_ti, Romania<br>tel: 40-1-613-2476 |
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Attachment A
(continued)

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|---|---|
| Dan Nicholae | Vice President for Agricultural Sector<br>National Defense Council Foundation<br>Economic Information Systems Consultancy |
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Attachment B
Recommended Equipment for Judet Cadastral Office

| Quantity | Description | Cost | Total |
|---|---|---|---|
| 2 | 486 DX2 66-MHz Computers | $ 3000 | $ 6000 |
| 2 | LaserJet 4M Printers | 2000 | 4000 |
| 2 | Large Format Drum Plotters ("E" size) | 7500 | 15000 |
| 2 | Large Format Digitizers (36" x 48") | 3500 | 7000 |
| 4 | Uninterruptible Power Supplies | 250 | 1000 |
| 2 | Total Stations (Zeiss) | 12500 | 25000 |
| 2 | EDM Distance Meters | 2000 | 4000 |
| 10 | Scientific Calculators | 400 | 4000 |
| 8 | 386 33-MHz Laptop Computers | 3000 | 24000 |
| 10 | COGO Software | 1000 | 10000 |
| 2 | AutoCAD Software | 2500 | 5000 |
| | Total for Typical Judet | | $105000 |
| | | | x 41 |
| | | | $4.3 million |