



Kakanj Cement Plant

September 1994



Center for Financial Engineering in Development

Final Report

KAKANJ CEMENT PLANT

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U.S. Agency for International Development
Washington, D.C.

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September 1994

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KAKANJ CEMENT PLANT

Problem

Government of Bosnia and Hercegovina (BiH) representatives have asked the U.S. Agency for International Development (USAID) to support the re-startup of the Kakanj Cement Plant by providing equipment for the associated quarry operations. The run is planned for the manufacture of 60,000 Metric Tons (MT) of cement, about four months on normal production. The plant has been inoperative since May 1992 because of the war. A second cement plant, located in Bosnia, is also inoperative. Currently, the demand for cement is limited and is being supplied from residual stocks or trucked from Split in Croatia. Once a peace agreement has been reached, the demand for cement will be enormous as war damage is extensive. This demand is expected to greatly exceed the capacity of both plants.

Background

The Kakanj Cement plant was constructed in 1978 by Hidrogradnja, a large Yugoslavian state-owned civil engineering and general contracting company, who had worldwide operations at the onset of the war. Ownership is retained by Hidrogradnja. Today the Hidrogradnja organization is inoperative; however, its administrative structure remains in place, and it is expected to restart most of its activities once peace has been reached. Kakanj is an industrial city located about 50 km northeast of Sarajevo. Nearby are a large coal-fired power plant, several coal mines, and limestone quarries. The mines are both surface and underground and produce coal for the power plant and for shipment throughout the country. The area is served by a major highway and railroad.

The cement plant has a capacity of 500,000 MT and was originally constructed for expansion to the 1,000,000 MT level. About 40 percent of the expansion phase was completed with the original construction. Fly ash from the nearby power plant is used in the cement-making process, and the limestone is quarried between 2 and 3 kilometers from the plant. The plant is designed to operate on either mazuit or gas for the clinker process, while electrical requirements total 6 mW, a small fraction of the capacity of the near by power station.

The limestone is reported to be excellent for the cement process and sufficient for at least 100 years of operation. It has been trucked to the plant in the past; however, its nearby location makes it ideal to move by a conveyor system, if the plant is expanded to the planned capacity. Limestone had been quarried with

bulldozers, loaders, and excavators. A small maintenance shop is located next to the quarry sites.

Site Visit

I visited the cement plant and primary quarry site on Thursday, August 17, my last scheduled day in Sarajevo. The delay was primarily due to security reasons and for arranging for appropriate principals to be present. Key individuals who participated in the visit were Bjelopoljak Hilmo, the Director; Enes Gotoausa, Secretary of the Ministry of Economy; and Mehmed Drino, General Manager of Hidrogradnja. Mr. Drino is also the director of the Directorate of Development and Reconstruction for Sarajevo, located in the office of the United Nations Special Coordinator for Sarajevo Rehabilitation (SCS).

The plant had not suffered any war damage and on the surface looked in very good condition, considering that it had not been operational for more than two years. Restarting the plant should be relatively easy. The director explained that, at this time, they only plan is to do a short run producing 60,000 MT of cement. The only import required is the fuel oil (mazuit) with power guaranteed from the nearby power plant. The skills to operate the plant are available and can be immediately mobilized. The mazuit required totals 4,000 MT and would be shipped through the Port of Ploce in Croatia and trucked to the site. Trucking security would not be a problem, according to the Bosnian representatives. The availability of the mazuit had not yet been firmly established, although the group noted that it was "being arranged" and had full confidence that it would happen. They did point out that trucking 4,000 MT of mazuit was a lot easier than trucking 60,000 MT of cement if it were imported. I observed that the gas line and gas burners were in place at the kiln. The representatives noted that supplies were inadequate to meet the demands of the plant; however, they were probably more associated with payment problems. The demands for gas at this time of year are low as no heating is taking place.

The BiH representatives made it clear that they did not need any help in restarting the plant and that their request was for equipment needed for the quarry operations, which we inspected next. We visited only the primary quarry site, which had layers of limestone interspersed between layers of coal and large quantities of shale. The limestone ratio was fairly low, resulting in the requirement to move large quantities of earth for each usable ton of limestone. This had been done with a bulldozer and an excavator freeing up chunks of limestone that were then put into a truck with a frontend loader. The equipment yard and shop was deserted, except for two dump trucks, a grader, and a front-end loader, all of

which had been well used, but with some repair, still had some useful life. When questioned about the whereabouts of the assigned equipment, it was reported to have been assigned to construction activities, which probably means being used for the war effort. A list of the missing quarry operation equipment was promised by Mr. Gotoausa, but was not received. A list of desired equipment, however, was provided to USAID at the time of the assistance request. Equipment needs are discussed in the following section.

Equipment Analysis

Kakanj Cement, through Hidrogradnja, requested the following equipment for the quarry operation. Costs noted are estimates developed by George Dykes, OFDA, USAID/Zagreb.

In the case of equipment manufactured outside the U.S., the closest U.S. model is shown and priced:

1 - Bulldozer "Caterpillar"	model D8N	\$290,000
1 - Wheel loader "Caterpillar"	model 966F	\$210,000
1 - Wheel loader "Caterpillar"	model 950F	\$150,000
1 - Grader "Caterpillar"	model 14G	\$245,000
1 - Excavator "Caterpillar"	model 224 model 325	non-US \$180,000
1 - Roller "Caterpillar"	model CS-431B	\$ 66,000
1 - Backhoe loader "Caterpillar"	model 426 model 426 B	non-US \$ 60,000
1 - Truck mounted crane "Grove"	model TMS250E model TMS250C	old number \$230,000
2 - Tipper Trucks "International"	model F5070 model S-2674	non-US \$ 90,000 ea

- 1 - Compressor "Ingersoll Rand" model P600S/WD -----
- 1 - Hydraulic Drill "Ingersoll Rand" model LMEG401C -----

In general, the foregoing list of equipment greatly exceeds the needs of a full-time quarry operation for the cement plant and instead appears to be a general request to develop a road construction operation.

For the planned 60,000 MT cement run, much of the equipment is not needed. Based on a full-time operation of the cement plant, approximately 2,000 MT of limestone is required over the daily 24-hour shift. To obtain this, waste material needs to be stripped and moved to the side, so that the usable limestone can be recovered. The D8N Bulldozer has the capacity to dislodge and move an average of about 3,200 MT of material a distance of 100 meters in an 8-hour shift and is more than adequate for the planned operations. The excavator, a large wheeled backhoe, has the capacity to move about 1,600 MT of rock in an 8-hour shift and can either duplicate or supplement the bulldozer operations. The request for a wheeled excavator is more appropriate for road maintenance operations than a quarry where a tracked excavator is needed. Again, the two wheel loaders are more useful on operations where they must travel over road ways or planned for use at many sites. Tracked loaders would be more appropriate for the limestone quarry. The capacity of the two proposed loaders are 3,100 MT and 1,920 MT per 8-hour shift.

Either are more than adequate to handle the total requirements in just a few hours of daily operation. The need for a grader is minimal if at all and could be handled by the quarries existing grader. The request for the roller and small backhoe, as with the grader, are for road construction and paving and not necessary for the quarry operations. Also, the truck crane is not required for this operation. On the other hand, the two dump trucks requested will be taxed to meet the needs of the plant, even when operating at up to 24 hours a day to deliver the needed limestone. The two existing trucks would be required for backup support. Two larger articulated dump trucks, suitable for the short road haul ("Caterpillar" model 300B), could handle the same amount of material in about 15 hours per day. The request for a compressor and hydraulic drill would be useful in breaking up larger rock but is not believed necessary for the planned short run.

Conclusions

The Kakanj Cement Plant has not been damaged by the war efforts and only lacks fuel to operate the kiln and power for other operations. Power is available locally, but, fuel, either gas or mazuit, has to be imported. This is currently being arranged for a short run of 60,000 MT of cement. The required skills and administrative staff can be quickly mobilized to start the plant.

A problem exists, however, with the quarry operations as all working equipment has been loaned out. Obviously, the easy answer is to get it back, although it is probably involved in national security operations, and thus may not easily be retrievable or may have been extensively damaged. The construction industry, in general, is inactive in Bosnia at this time, and suitable equipment to complete the planned short run should be easy to arrange and the more appropriate short-term solution for the quarry operations.

The equipment requested far exceeds the needs of the cement plant and is in part inappropriate for a limestone quarry.

Since a permanent start up of the cement plant is not planned at this time, nor would be needed while the war continues, support of the equipment request is not warranted at this time.

Recommendations

1. Take no further action at this time on the equipment request as proposed.
2. Consider the provision of available military surplus equipment, if available, with an emphasis on a D8 sized bulldozer, a tracked front end loader with at least a 2.5 cum bucket, and 2 to 4 dump trucks with capacities of 10 cum or larger.
3. Consider the cement plant as a production enterprize as a target for support once the war has ended. Needs will include assistance for financing of the plants expansion to 1,000,000 MT, modernization, and privatization. Financing should be possible through international investors if privatization efforts are successful and attractive.

Appendix A

LOG OF AUGUST 1994 BOSNIA TRIP ACTIVITIES

- Aug 8 Monday—Departed Dulles at 6:55 pm on Delta Airlines flight No. 60 arriving in Frankfurt at about 9:00 am the next morning. Traveled with Dayton Maxwell, A.I.D. Representative for Bosnia. Most of Monday was spent getting organized for the trip.
- Aug 9 Tuesday—We left Frankfurt at 4:20 pm arriving in Zagreb, Croatia at 5:45 pm (same time zone). We were picked up by the USAID driver and taken to the Intercontinental Hotel.
- Later had briefing meeting with USAID/Croatia Acting Rep. Bill Erhdalt and Clark Gregory, Admin Officer (contractor). We adjourned to dinner where Tim Knight of the DART (OFDA) team joined us. We generally reviewed the status of the Bosnia situation and the logistics of traveling in the region.
- Aug 10 Wednesday—Started the day at the USAID Croatia offices where I met Tom Yates, another A.I.D. contractor working in the local Mission. Bill Dries also joined us. He is participating as part of our team reviewing the gas heating situation in Sarajevo. He arrived last Sunday and is also staying in the Intercontinental Hotel.
- Dayton and I next met with UNHCR staff to expedite the processing of our UN passes in order to travel to Sarajevo on UN aircraft, the only access to the city at this time. We also made travel arrangements for a flight tomorrow. Everything was full today.
- We next met with Tim Knight and George Dykes of the DART group who had separate offices away from the embassy where USAID was located. Tim gave us a background of his work on private productive enterprise, and a copy of a report "Joint UK/US Planning Mission to Sarajevo" March 8-23, 1994. Tim gave me a list of contacts that should be useful in our forthcoming work. George briefed us on his experience in procuring surplus military equipment and how it might be useful in the Cement Plant or other activities. He is available to assist with such an activity. He has procured several Bailey Bridges for UNHCR.

Spent the afternoon reviewing the "Joint UK/US Civil Planning Mission to Sarajevo—March 8-23, 1994" Final Report dated April 26, 1994. Took a break to pick up our UN passes from UNHCR and returned to the American Embassy where the A.I.D. offices are located. Met others on the staff including Tom Yates, PSC and Mirna Zimic on the USAID administration staff.

Aug 11

Thursday—Departed our hotel in Zagreb for the airport to catch a UN flight to Sarajevo. Our party included Dayton Maxwell, Bill Dries and myself. We were on standby and the last three to get on the flight. Helmets and flakjackets were required. My flakjacket was an ancient version which felt like it had been lined with lead bars and certainly was heavy enough to have been. Our aircraft was a Russian Ilyusian 76 similar to a C-141. We sat on fold down seats located along the outboard edges of the aircraft while the center was filled with cargo such as trailers and an automobile. We stopped at Split to discharge passengers. Most travelers were Scandinavian military on UN duty. We were met at the airport by Aldijana Buhic of the local DART office. She is the local representative with the title of Program Assistant. Our trip from the airport to the hotel was in a CRS armored vehicle. We arrived at the Holiday Inn about noon and after lunch proceeded to the DART office to arrange an afternoon of meetings.

We started the afternoon with introductory meetings at the IRC Office (International Rescue Committee) where we met Bolba; Damir Lulo, water engineer (Inzinjeri); and Kemal Niksic who is working on gas and production enterprises.

Our next meeting was with Tony James of ODA who is working on the gas distribution program. Mr. James noted that the ODA program focused on three elements:

- Cathodic protection
- Leak Detection
- Illegal Connections

We left Bill to continue discussions while Dayton and I went on to meet with Ambassador Eagleton, United Nations Protection Force (UNPROFOR) Special Coordinator Office Director. He was optimistic that some agreement would soon be reached that would at least stop the sniper action that continues to be a problem. We had also heard

an optimistic statement from an American Military Advisor and a key negotiator. Eagleton also noted the following:

- Drino runs the Sarajevo part of the Government
- The UN Trust Fund is a nightmare (not yet working)
- The Government is asking for use of local consultants in studies
- Drino is the expert on the cement plant
- John Baptist Dupont is the expert on Small Enterprise/Urban Development on the Coordinators staff

Our next meeting was with Dino Bicciato, Manager of the Action Group Civil Engineering of the Special Coordinators Office. Again this was an introductory meeting and we agreed to follow up later to discuss needs and plans.

We moved on to the Office of John Fawcett, Manager Action Group, Education and Health. He noted that bakeries are moving toward private ownership. He passed on the following ideas for productive enterprises:

- Boots (shoes)
- Small family hotels such as bed and breakfasts
- Redevelopment of tourist related industry

In this regard he noted that there was a local hotel management school in Sarajevo.

Peter Scott Bowden of UNWFP joined us and explained his work which has been primarily in support of a FAO mission. (Both John and Peter are Canadians.) He traveled with the team throughout the country and has a good grasp of the agricultural base. He also noted that the earlier seed program was excellent and the source of much of the food today. Weaknesses had to do with poor seedbed preparation and the lack of herbicides and fertilizers.

We walked back to the hotel from the office. The electricity was off for several hours in the evening we heard the sound of consistent gun fire. The Holiday Inn is located in a critical unprotected area and from the south open to sniper fire. The UN stations armored equipment

between the Hotel and Serb Zone and is the source of much of the shooting as they return sniper fire.

Aug 12

Friday—The Airport was closed last evening, soon after our flight had arrived two air craft were hit by sniper fire. Fighting also had picked up to the north. The optimism of yesterday had diminished. The morning was relatively quiet where we were located with little background fire.

Dayton's and my first meeting of the day was with Hasan Muratovic (Minister without Portfolio) and Dr. Mehmet Drino, Head of the Committee for Reconstruction. Drino is also the General Manager of Hidrogradnja Civil Engr. Co. The Minister explained the status of activities and the war while Dayton reviewed the USAID objectives and the status to obligating \$10,000,000. The Minister expressed his concern at the slowness of the US program and hoped that this could somehow be speeded up. Dayton brought up the need for accountability and noted that the methodology for moving money still had to be finalized. The Minister explained the BiH plan for a Coordinating Committee (ICRED) that would be able to handle US Grants. He noted that they will be seeking help in its administration, project management and for financial support. The ICRED would run parallel to the Eagleton Trust Fund.

Dayton noted that USAID wanted to focus its activities on a few projects rather than the more extensive list discussed previously. The Gas program had been identified as the primary need, with possible support of the Kakanj Cement Plant. Production Enterprises are being considered for the next phase or next years funding. The Minister felt strongly that investment in gas was not needed or "won't work". He, however, conceded that he was in full agreement that we could spend our money where ever we wanted. In regard to the Cement Plant Mr Drino agreed to organize a site visit for sometime next week.

The Minister made a plea for \$300-500,000 to support Mr. Drino's operations to design about 145 projects for the reconstruction program. Funds would be used to pay for design services and offices supplies. Design would be done by the staffs of two former institutes and private sector engineers.

In regard to privatization, the Minister noted that a privatization law is under preparation and currently being debated by the government.

He was positive a western style model would result. For example most houses are already privately owned while the highrises are not.

In regard to Production Enterprises, he felt the critical needs were for the textile industries and food processing. Former export industries should be a focus such as wood items and furniture, leather, textiles, electrical transmission, bearings and food items including a chocolate factory. He says the government will be open to 100 percent of private ownership to restart some companies.

Our next meeting was with Enes Gotoausa, Secretary for the Ministry of Economy. He talked through a translator, Alma, and started off by explaining (complain) about the number of people coming through, seeking the same information, while nothing seems to be coming out of it. He notes that key players want to start soon while war is still a problem. We need to choose priorities to get out of this confusion. At this time there is no production as most of the labor force is in the army. People are focused on social welfare.

He suggested that the critical need is to focus on job creation for refugees and returning army members. Areas of highest importance are:

- Building materials such as the cement plant
- Quarries
- Wood industries
- Food processing industries
- Textile industries

He suggests that:

- Should focus on areas with Croates and Bosnians, employing both
- 20 to 25 small projects should be considered for immediate startup

A second area of importance is the restart of heavy industries including mechanical and auto works.

A third area of needed focus is the development of a financial structure and system, drafting of laws and regulations including those for foreign investment. Help will be required to review and critique such documents as they will desire a western approach.

We next met with Stephanie Freese of IRC to discuss her work on textiles. She noted that this had been a passing interest and only at the cottage industry level. She had hoped to create jobs for women at the \$60 to 80 per month level.

We continued our textile discussions with Phil Oldham and Sasa Mirkovic of CRS who are working on production enterprises in general. They explained their arrangement with the Klutch Factory which is reported to be privately owned. Klutch is located near the DART office. CRS has placed an order for 250,000 socks for humanitarian distribution this winter. This is funded by OFDA. Klutch will be provided the raw materials and needles and paid 1 DM per pair. This will provide jobs for 30 workers for 4 months. Sasa, who is also a MBA candidate, noted that the Klutch management consisted of a general manager, marketing manager, and technical/production manager. He was unable to comment on financial management and noted that such information was not included in their proposal. Oldham noted that they were also working with a bakery to produce pasta. This has been a normal product however has recently been produced without eggs because of the lack of supply. A second project is to restart a bakery which has been down for two years. Both are humanitarian projects using food aid supplies and development and sustainability is not a CRS concern at this time. Both projects are with state industry.

Bill Oldham noted that there are only 5 or 6 local NGOs in BiH of which only 4 are strong. On the other hand there are 40 international NGOs.

In regard to private sector production, Sasa explained that Viteks is a large textile industry that produced 1,500,000 blankets per year, mostly for export, that had been privatized on the old model with 49 percent employee ownership and 51 percent State ownership.

Dayton and I met with Dr. Boris Tihi, Professor and Director, Business School, Economic Faculty, Sarajevo University at the Hotel in the evening. Sasa Mirkovis also attended since he also is working on his masters as well as a CRS employee. The purpose was to get his ideas on training for business needs and how the University may assist. I left him a copy of the CFED course schedule for ideas. I also explained, very generally, the concepts of total quality management (TQM).

Aug 13 Saturday—Noisy again last night as huge explosions woke both Dayton and me. Bill had moved to the DART apartment, located in a quieter part of town, so he didn't hear a thing. Have no problem sleeping through the routine shooting. The airport opened again today so Dayton was able to get out and on his way to Washington coordinating meetings.

Our first meeting of the day was with Faruk Smailbegovic, Minister of Energy and Industry. Alma again was our interpreter. The Minister noted that his portfolio included Agriculture, Food Processing, Construction, Mining and Natural Resources. Key comments made by the Minister were as follows:

- Economic problems are difficult and final solutions must await the outcome of the war
- Must do our best to assist the population at the humanitarian levels at this time
- Must find jobs for people
- Must prepare laws/rules for next phase
- Need to determine the reconstruction strategy

The Minister noted that work on the gas system is of the highest priority. Gas will be the primary energy source for next winter. Regulators and meters are important. All boilers need to be converted to gas as other fuel is not available. They have been negotiating with the Singer Company from Philadelphia (American Meter) who would provide regulators and meters both assembled and unassembled. The Unis Co (local) has the capacity to assemble and ultimately manufacture, possibly under some joint agreement with the American firm. A meeting is planned later this month in Italy to follow up with this plan which is to provide 10,000 regulator sets plus unassembled kits. The Minister showed us the letter regarding the meeting. The inference was that this should be considered for USAID funding. Their contact is Doug Prendergast of the American Meter Company. The Minister also noted that they are seeking alternative gas sources which now comes from Russia. In regard to local production of regulators and meters the Minister noted that the legislation is now being written to allow participation with foreign companies.

The Minister next discussed electricity noting that the problem is lack of production. The system has 2000 MW of installed capacity while only 150 MW is being produced. In order to bring production up spare parts are required for both the mines and the plants. Plants also have extensive war damage that must be repaired. Financing will be required to meet the minimal needed levels of production. The financing of major improvements, he expects, will be done with credit and commercial arrangements. He made the point that in order to start up industries, increased electrical production will be required.

The Minister explained that his plan for development after the war includes the following:

- Survey of the situation
- Start up all transport, power and telecommunications infrastructure
- Privatize previously successful companies (production enterprises)
- Allow everything else to develop through the small business sector

The Minister again emphasized that future development must be based on small businesses. He says that they (the Government) have a little experience with a Market Economy but that this is insufficient to manage the process. They will need help in training and education. He feels that encouraging the return of experienced refugees is important to the future development of the country.

We next discussed the Kakanj cement plant. The Minister emphasized that the plant did not need any equipment, a view opposite of Minister Muratovic and Mr Drino. He did say the need was for spare parts, fuel and electricity in the range of 5 to 6 MW. In regard to fuel, they had located enough Mazuit to undertake a short period run. The other cement plant could also be started if electricity and gas were available.

In regard to USAID support of the gas program, the Minister agreed that funding could be made through IRC (International Rescue Committee).

Mr Simonovic of the Sarajevo Gas Company joined us for the remainder of the meeting. He and Bill agreed to a follow up meeting next week. At this time the Minister noted his long term plan for the Gas Company was to modernize the control system using a

centralized computer. He also planned to establish remote controls and metering based on US technology.

Our next meeting was with Mr Kupusovic, Deputy Minister and Chief Architect. He had recently completed a country wide survey of construction material industry start up needs. He promised to send Dayton a paper summarizing needs and costs. He noted that the greatest need was for crushing and screening equipment for the production of sand and gravel for road construction and for concrete. He agreed with Minister Smailbagovic that equipment was not needed for the cement plants but rather spare parts and electricity.

Dayton, Bill and I next met with Mr. Drino and Ambassador Eagleton. Drino reaffirmed that investment in the gas sector was a number one priority for USAID funding, even though the Minister had expressed otherwise.

Mr. Drino reconfirmed his request for cash to support the design efforts for about 145 projects. I promised Dayton that I would give him some alternative implementation plans if he wanted to implement this idea (this was done prior to my departure).

We set up a field trip to the Kakanj Cement plant for next Thursday, my last scheduled day in Sarajevo. Drino will participate. He says the plant capacity is 500,000 MT per year.

We discussed the new minimum wage law which has caused a lot of confusion where the government had set rates at 6.50 DM per hour. This, it is believed is a loaded rate intended to cover fringes, taxes and overhead with actual hourly pay in the range of 300 DM per month. This is based on a 6 day week and an 8 hour day and amounts to 1.50 DM or \$1 per hour.

The Ambassador invited us to the bi-weekly coordinating meeting on Tuesday at 1:00 pm.

Bill and I spent the afternoon visiting the PLIN Gaz Company. We were accompanied by Kemal of the IRC who also served as our interpreter. We met with the senior management staff, who stressed that they were all engineers. Asim Zorlak, Director General, gave us a briefing on the operation. Before the war the company produced 50,000 ton/yr of various gases with a \$25,000,000 capital investment. The capital was 87 percent equity and 13 percent debt held primarily

in supplier credits. Profit averaged 20 percent annually based on the capital investment and was put back into the industry as new and expanded capacity. The company had gone through the privatization model in vogue at that time of which employees held 68 percent of the ownership and the state the balance. The plan now is to renationalize the company and then, at some future time, reprivatize it under a model that is yet to be developed.

War damage is estimated to be about \$12—13 million and includes the loss of the oxy-acetylene plant to the Serbs. Also a plant was lost to Croatia on the earlier partition of Yugoslavia.

The business is operating at reduced levels, the key staff are working and moral and spirit good. The management group is positive and looking forward to rebuilding this profitable business.

We next visited the propane/butane bottling plant. Of three large vertical storage tanks only one is usable. A second took a direct hit, while empty, however will require major plate replacement if at all salvageable. The third was hit by shrapnel and will require some plate replacement. The company feels that they will have to bring in an European expert to do this work. The bottling plant is in tact and capable of handling about 3000 bottles per day. About 50,000 bottles are located in the city of which 3000 were stored at the site. Several hundred had been shot up however.

The operation was impressive and certainly appeared able to handle local propane/butane needs. Transportation of both the bulk and bottled gas will be the key to meeting the needs of the city.

We finished the day with a site visit to the IRC sponsored Sorro's funded water treatment facility. It was located in a highway tunnel that had dedicated one of two lanes for the facility. Damit Lulo conducted the visit and is the IRC engineer responsible for setting up the facility. The system consists of five package plants producing 150 CUM/hr each. Three are operating in the tunnel while two, located at a separate site are not yet on line. The total cost was \$2 million and included 2 emergency generators sets. The process is simple and includes a sedimentation tank followed by a sand filter operated under pressure. Backwash water is dumped into the sewer system which has its own problems and is reported to be operating very poorly. The units were manufactured in Texas and reported to have

been delivered in 4 months. The system is impressive for meeting emergency requirements on a fairly large scale.

Aug 14 Sunday—Dayton Maxwell got off yesterday afternoon on his return to the US. Fairly noisy night with the firing between the snipers and the UN. Watched a shoot out of a building from the upper floor of the hotel on the Serb side of the building on Saturday evening. Today, the Bosnian Muslims and Bosnian Serbs signed a non sniping pact to be effective tomorrow.

Spent the day catching up on notes and reading material.

Aug 15 Monday—A quiet night as the pact seems to be taking hold, with only occasional rounds of firing heard. A very loud thunderstorm and rain however did interrupt a good sleep. The temperature dropped to a reasonable level also from what felt like highs in the 90's over the past few days.

Met with Rob Rowe, Manager of Action Group for Gas, Special Coordinators Office. For the long term he suggested that the following need to be considered for the gas sector:

- Gasification of industrial plants
- Improve distribution
- Develop new customers
- Develop a regional system with Hungary, Croatia and Serbia
- Look for alternative routes/sources such as the Port of Ploce
- Privatize Sarajevo Gas

He explained that EGT is a private Bosnia Consulting Engineering firm working in the energy field employing 30 engineers with a total staff of 100.

Reviewed and developed comments on the PLIN/IRC bottled gas proposal and left them with Bill for incorporation in his work. My focus was on issues related to development of a sustainable production enterprise. (See attachment 1).

Aug 16 Tuesday—The daily security report is that last night was quiet. Our resident American Croatian army advisor said he didn't even hear a fire fight which is not precluded by the sniper agreement. However,

on the other hand, the elevator in the hotel has not worked for two days while my 6th floor room is up 8 floors with each floor equivalent to two residential flights. The advantage of the Holiday Inn is water which is trucked in load after load. It is even drinkable. Everyone else in town seems to be suffering. Our routine electrical outages are shared by the city in general. The local hotel food leaves much to be desired, especially the breakfast. The TV is fuzzy. Service is limited, except my dirty laundry was washed without my permission. To top this off, the hotel rates exceed the per diem by \$20 per day. Bill on the other hand opted for the free apartment away from the shooting and water twice a week whether needed or not. He has no television and no elevator to cause frustration either.

Bill and I met with Mr Simonovic, General Manager of Sarajevo Gas and Safet. Mr. Simonovic also serves as the chairman of the gas coordinating committee. Bill conducted his business first as he had to leave early for another meeting. The key issue focused on the request for procurement of a meter/regulator set in a protected case verses installation of the more needed regulators as the first step. Simonovic insisted that we must proceed on a developmental basis, not piecemeal, and that phasing such work would increase costs and time. The units would come from American Meter Co. and cost about \$180. The regulators and the meters each cost about \$50. UNIS, a local manufacturing company, had a license to manufacture meters and regulators from American Meter before the war and now wants to resume this relationship. At that time the componentry of the regulators was 80 percent local and 20 percent US.

We next discussed the possibility of privatizing Sarajevo Gas. I sensed some reluctance or more likely a lack of understanding on how this would work. He does, however, want a program explaining how this would work. The Company does not have the equivalent of an annual report, however Mr. Simonovic has developed a detailed plan of operation of which he promised me a copy. He noted that at the beginning of the war, 130 CUM/gas/yr were being distributed to about 60,000 individual customers. The company's debt is \$60 million held by the World Bank. This was being repaid at \$3 million per year when the war broke out. The district heating plants consume 60 percent of the gas supply which results in a large seasonal distortion.

We also discussed the possibility of USAID assisting with the restart up of the PLIN bottled gas plant and he supported this as a good idea.

I next met with Dino Bicciato, Manager, Action Group Civil Engineer of the Special Coordinators Office. Xavier Devictor, Technical Assistant and Liaison Officer of the Office also joined us for part of the meeting.

Dino gave me the summary report of "Road and Equipment Needs" and a summary schedule of "School and Hospital Tenders". We discussed the possibility of using surplus US Military equipment to meet some of the equipment needs. Dino's plan is that equipment would be made available to contractors as a credit on some jobs as a means of assuring adequate capacity. At this time no tenders had been let or even advertised so he had no experience on how the Coordinators Office Role would work in the process. He viewed it primarily as a facilitator role with projects proceeding on a bilateral basis. Final construction drawings and specifications could be tailored to the donors desires, however his office would provided documents based on FIDIC and local specifications.

The Coordinators Office would not have the capacity to directly implement projects on behalf of donors at this time, nor does it appear to having any interest in doing so.

Tim Knight reported from Zagreb that he would be unable to make it this week since his flight was canceled yesterday. We had planned to meet with Ramavic together.

Aldijana, Bill and I attended the bi-weekly Coordination Committee Meeting at the Special Coordinators Office. This is attended by all donors and NGO's many who come for the day from Zagreb for the meeting. Bill reported on his gas/boiler house work and I noted that we would look for possibilities of using surplus Military equipment for the road projects. (See attachment 2 for notes on meeting.)

Aug 17 Wednesday—Shooting picked up a little last night, but the weather remains nice. Elevators are still on vacation.

Today the plan is to focus on large scale production enterprises.

My first meeting was with the UNIS General Manager, Mr. Kahvedzic. He was very outgoing and impressive as a businessman.

UNIS, before the war had gross revenues in excess of \$1.4 billion, of which \$330 million were from exports. Of the exports, 95 percent went to the West. They specialized in weapons, raw materials production, auto assembly, bicycles, machinery, bearings and telecommunications. They had several offices in the US primarily through working partners. Profit was about \$300 million annually with salaries averaging \$300 per month. Their position in Yugoslavian commerce was that they represented 2 percent of the total industrial output, 6 percent of machine manufacturing, and 3 percent of total exports. The company operated 60 factories. Their foreign arrangements included 12 joint ventures, 33 long term agreements, ownership of 4 offshore companies and 13 representative offices. Their departments included industry, engineering, commerce and trade, tourism, car rental and banking.

Today they have 20 factories operating with production primarily for military needs.

Because of the war, former international agreements have broken down and must be reestablished before any re-initiation of past activities can begin again. This includes the Singer, American Meter Company agreement. Before the war, UNIS had assembled or produced 150,000 regulators and 15,000 meters as well as other selected gas products destined for the end consumer, under their Singer agreement. The Singer production was started in 1981.

UNIS's plan is to renew the Singer agreement, with the first steps being taken next week in a meeting in Milan, Italy. Mr. Kahvedzic and Mr Simonovic, of Sarajevo Gaz, both plan on attending the discussions. Their plan is to implement such a plan in three phases. First is to restart production by assembling parts, while the second phase is to work out supply agreements with the partitioned countries of the former Yugoslavia. The third phase is to recreate the manufacturing franchise with American Meter Company. With these elements in place, UNIS feels that it will have excellent marketing opportunities in the Balkans, Iran, Turkey and the Central Asian Republics. Comparable similar equipment is apparently not being manufactured in these areas. Implementation of this big picture depends on the war ending. Phase 1, however, can start at anytime. UNIS currently has 90 people ready to start assembly immediately of which 15 are Mechanical Engineers. This assembly start up will give

the UNIS staff a chance to become updated on technology changes and work out a methodology for later large scale production.

UNIS's plans, as regards, other divisions is to restart each with as much foreign investment and partnerships as can be arranged. UNIS's former levels of production were far greater than the capacity of Bosnia to absorb in the foreseeable future. To rebuild at even a fraction of the previous levels will require a major portion of any production to be in exports or the tourism industry. The status of the 4 offshore companies is as follows:

- Chicago—have control after court action
- Germany—no problem
- Milan—in court with Serbs
- Austria—unknown

The Chicago Office is mainly involved with computers.

We next discussed privatization. Mr. Kahvedzic notes the following.

- Purpose is to raise capital and to improve quality
- The governments current thinking of selling 20 percent to employees will not improve company status as will not bring in adequate capital and resources
- Supports the concept to collect capital from selling shares to foreign interests
- Govt's approach is dangerous
- There is no new capital in Bosnia, must come from outside
- Govt needs rules and regulations supporting Foreign Capital
- Capital must be mobile, transferable at the will of partners/directors
- Improper taxes can make process more difficult
- Thinks Govt wants to keep big companies under its control
- Need to be competitive with the West

UNIS owns 2 buildings in excess of 20 stories as part of their headquarters complex and adjacent to the Holiday Inn. These are heavily damaged by the war and will require \$12-20 million to fix. They would rent for 1.9 million DM based on a rate of 20 DM per SM. Rates in town now average 30 DM per SM.

I next met with the Energoinvest General Manager, Edib Bukivic who presented a completely different profile than the UNIS CEO. He was young and had recently been assigned to the job. He was previously in a deputy position in the Prime Ministers Office. He did not exhibit the same business sense as shown by Mr. Kafedzic and preferred to talk the government line.

Energoinvest was Yugoslavia's largest company before the war with \$600 million in exports annually primarily in equipment and metals. They had 55,000 employees and 20 joint ventures around the world. In addition they had 30 offices throughout the world. Today many of their factories are under Serb control while key staff and skills remain in Bosnia. Their current activity is dedicated to military production.

In regard to privatization, he felt the company would be opened to foreign investors. In regard to privatization in general he noted that pension fund obligations of large companies need to be resolved as these are unfunded at this time. The State may pick up this burden. He felt that foreign investors should be equal to national investors. He was concerned about companies selling experts cheap and noted that the government should not permit this. He felt that highly qualified Bosnians should be earning \$5000 to 6000 per month. I suggested that in a free market, such salaries would depend heavily on the companies ability to remain competitive. Many of those that I have talked with have a very high opinion of the Bosnians ability to develop and produce products of the highest quality. The war effort and the sanctions, they point out, have resulted in many innovations and developments. Obviously the Sarajevo based Yugoslavian industry had done very well before the partition but it appears that much of this was done on a value added bases and using relatively cheap but efficient labor. Success, in part, appears to have come from their ability to make strong and lasting arrangements with western companies and to import complex components which were assembled with some local manufacturing and than reexported. The Yugo car had some limited success, however viewed locally as a general problem to operate. This model may continue to work in the future

if the government does not tamper with wage rates and excessive taxes that will destroy competitiveness.

Mr. Bukivic felt that the future of the company would depend in part on developing joint ventures with Westerners.

Returning to the salary issue he noted that people had lived the past two years on humanitarian aid, savings and remittances from overseas family and friends, inferring that they would in the future expect high salaries and a high standard of living. I left feeling that I had talked to a politician, not a businessman.

Aldejana and I met with Ramair Ramovic of the Ministry of Energy and Industry. Tim Knight of OFDA has been working with him on potential Productive Enterprise opportunities. He ran down the standard list of possibilities of which OFDA and Dayton have proposals on several. He noted that he has about 200 potential projects of which many deal with agribusiness and textiles.

One concerned Energoinvest and the restart up of their valve assembly operation which was under a franchise with a US company.

He suggested one innovative local development which was a 200 watt generator running on a Sterling cycle engine.

Prefabricated housing was also suggested.

He noted a couple of the projects that CRS is already implementing.

In general the list probably includes many very good projects and would create 1000's of jobs. Most are oriented to small business, although some were specifically for the restart of divisions of the former State industries. The common thread of the list is that major financing is needed for each project. If any major development of these productive enterprise projects is to happen, a plan must be developed that includes funding sources, training and technical assistance, especially for the small business sector.

My next meeting was with Jean-Baptiste Dupont, Manager of Action Group, City Development, Special Coordinators Office. He was a refreshing change, having given productive enterprise considerable thought and having developed a preliminary action plan with some interesting approaches.

He described the Bosnians as having a good entrepreneurial spirit but with a very bureaucratic system. The system cancels the spirit.

He left me a copy of his plan which he notes needs much more development. He suggests that an Agency be created to manage private sector development. The Agency would receive all requests, analyze and advise, and work with private and public finance sources to raise necessary funding for approved projects.

We talked about the possibility of establishing a "fund" that would serve as the primary source of capital, presumably financed from donors and multinational banks. Money would be made available on a loan basis, with conditions based on the level of risk. The fund would focus on small businesses as big business general can manage on their own resources and contacts.

Jean-Baptiste noted that he had two consultants arriving in September to survey the general skill levels and productivity of local workers and to review State industry from the standpoint of determining what should be salvaged.

USAID should continue to work with Mr Dupont and possibly combine resources to maximize limited resources.

Aug 17

Thursday—Today we took a field trip to Kakanj to visit the cement plant. Jim Carlson, Director of IRC, drove us along with Bill Dries and Minja, an IRC interpreter. The trip was uneventful as we passed all checkpoints without problem.

At Kakanj Cement we were met by the Director, Bjelopoljak Hilmo, Enes Gotoausa, Secretary Ministry of Economy and Mehmed Drino, General Manager of Hidrogradnja (also Director of Reconstruction).

The cement plant was built in 1978 by Hidrogradnja a Civil Engineering and General Contracting Co who worked world wide before the war. Ownership is retained by Hidrogradnja, a State industry.

Kakanj is an industrial city with a major power plant and several coal mines as well as limestone quarries used for the cement manufacture. The mines are both surface and underground with the coal used for the adjacent power station and for shipment throughout the country.

The cement plant has a capacity of 500,000 MT and planned for and expansion to 1,000,000 MT. About 40 percent of the second phase was

completed with the original construction. Fly ash from the near by power plant is used in the cement making process. The plant ceased operation in May of 1992, however management and craftsmen are reported to be still available to restart the plant. A primary reason for closing the plant was a lack of fuel. A shortage of power is also a problem as 6 MW are required. The clinker process requires considerable heat which is supplied by burning mazuit. The plant can also operate on gas however supplies are inadequate.

The plan for the plant at this time is to make a run of 60,000 MT of cement which will take about a month and a half. Mazuit required is 4000 MT. They are currently making arrangements to truck this from Ploce. They have been assured an adequate power supply.

We quickly toured the plant. On the surface the plant looked adequate for a quick startup. No war damage had occurred. The technology and operation is fairly simple. Housekeeping however was fairly poor. Hopefully this did not extend to maintenance.

Some facts passed out are as follows:

- 1 kg of clinker requires 120 CM of gas
- 1500 ton of clinker equal 1000 ton cement
- 1 ton of Mazuit produces 20 ton of cement
- Sarajevo uses 50 percent of the Kakanj output
- Cost was 100 DM/MT for bagged cement before the war
- Bulk cement was 15 percent less
- Transport costs of cement from Split are 200 DM/ton
- Gas costs 30 percent of the price of Mazuit
- Mazuit costs .25 DM/kg delivered to plant at present
- Electricity cost .07 DM/kg
- Bagged cement weighs 50 kg

We discussed the plans for privatization of the plant. A privatization plan was underway at the beginning of the war but stopped. The general feeling is that this will be re-initiated after the war.

We next visited the quarry which is between 2 and 3 km from the plant. Limestone is trucked to the plant from two quarry sites. The limestone in the area is reported to be adequate for 100 years of operation. The second phase program had planned to use a conveyor rather than trucks. The limestone, is reported to be of a high grade. However on viewing the quarry the limestone is in fairly thin layers between layers of shale and coal. Extensive amounts of earth must be moved to obtain a ton of limestone. The quarry work appeared to be somewhat haphazard. If any organized plan was being followed, I did not see it. We next visited the maintenance yard and shop. Outside was what appeared to be an abandoned dump truck. Inside were several mechanics (labors) who did not appear to be doing anything productive, but reported to be getting three pieces of equipment ready for operation. They may have been there for our benefit. The equipment, on its last legs, included a Mercedes dump truck, a Gallion grader and a front end loader manufactured locally. When asked where the rest of the equipment was, they reported it had been loaned out (presumably for the war effort). Mr Gotoausa promised that he would get me the complete list of the loaned out equipment. At this stage, I would assume that most of the equipment would be near the end of its useful life and probably should be replaced. There is a chance however, that the original equipment had already been replaced and the missing equipment may be fairly new. What ever the case, I am sure enough equipment can be scraped together for a 60,000 ton run. Continuous operation, however will be a different matter.

Enes Gotoausa took us next to the Vitex textile factory at Visoko. We were conducted on a plant tour by Mirsad Sirca, General Director. The plant was operating on a limited basis with blanket weaving and yarn spinning in progress. The yarn was being made from waste fiber. The facility was clean and orderly although leaked a little during a heavy thundershower that occurred during our visit. It appeared as if there had been no war damage. We were than shown a video of results of an attack in May 1992. It was hard to believe we were seeing the same place as damage was extensive. At that time 80 percent of the raw material burned in warehouses, and 20,000 blankets destined for Germany burned in trucks. Damage totaled 35 million DM and was repaired by the company. Repair included 7000 SM of new roof and 4000 SM of glass replacement.

The company currently has 350 employees while the prewar level was 3500. They estimate that one worker at Vitex provides the basis for 20 others in the downstream textile business.

They had no information on the company value but estimated 150 million DM. Supplier credit debt totals 6 million DM. Vitex has several other factories of which some are under Serb control.

At this time the plant is operating on a humanitarian basis using prewar undestroyed materials. Blankets are given to needy families (or for military use). Reserve supplies have just about been exhausted and funding or material must be found soon if operations are to continue. The Director presented his plan for rebuilding production, which requires funding.

The first phase is to replenish raw materials such as dyes, spares, fiber and yarn. He is asking for 1 million DM's which will allow for 6 months operation and create enough production to build up a cash flow adequate for continuous operation.

The second phase is for the start-up of an underwear weaving facility. This will cost 1.5 million DM including machinery. The availability of this material will keep many sewing/assembly factories busy in Bosnia.

The third request is to rebuild the blanket factory, historically a key component of the company with many world wide customers. The prewar production of this unit was 40 percent of the States capacity. Machinery needs to be replaced and is currently a mixture of French, Italian and German manufacture. Costs are estimated to be 1.3 million DM.

Murat Hanjalic, General Director, of KTK of Visoko joined us for the discussion session and also made a plea for assistance. His company does both leather and textile work. His prewar status included 350 shops in Yugoslavia, some with very expensive lines. Major factories have been lost to the Serbs valued at 70 million DM. They have recently worked on an IRC humanitarian project. They have between 10 and 30 people employed depending on electricity and materials. He says that they have many possible orders but do not have the capital to acquire materials.

The company operated with 6000 employees before the war with exports at 60 million DM and imports an 20 million DM.

A Ministry of Energy and Industry Lawyer also joined us at the discussion meeting. He explained the Governments thinking on privatization, which was the same as explained to us by the Minister himself. He did say that they were looking at the Slovenia Privatization Model. The Ministry representatives and Company Directors all said they would like an explanation of privatization processes and models in order that they may better understand the concept.

On the return trip we stopped at a UN facility manned by the Danish. Jim Carlson bought some supplies at the PX. We arrived back in Sarajevo at about 6:00 and worked to 8:00 pm at the office.

Dayton Maxwell arrived on the 4:00 o'clock flight. Shortly thereafter two aircraft were fired upon and a mortar round hit the airport. Of course it was closed again. Bill and I were scheduled to leave tomorrow at 10:00.

Bill and I had a debriefing meeting with Dayton at 8:00 pm. Rob Rowe and Aldiana attended part time.

Aug 18

Friday—Continued the debriefings with Dayton at breakfast. Packed up and checked out of the Hotel not knowing the airport was closed. Took advantage of the delay to catch up on notes and report writing. Also met again with Simonovic, the Director of Sarajevo Gaz and Safet, a mechanical engineer. Both speak good english. The purpose of the meeting was to follow up on his future organization plan that he had promised me. This he provided along with other general materials. He again asked if I could provide him examples or case study materials on the privatization of gas companies. He also asked if I could recommend a telemetering expert to advise them on establishing a telemetering program. He prefers to make contacts with an American company. He said that the Energoinvest valve division was not manufacturing gas equipment, however agreed that this should be considered on a restart up. Bill had asked me to see if the meter and regulator enclosure boxes couldn't be made here rather than importing from American Meter Company. He said that this had been the practice in the past and certainly could be done again. He noted that this would be one of the discussion points in the Malan meeting. Mr. Simonovic also suggested that we meet with Union Invest which, before the war, produced climatization equipment such as heating and

air conditioning units. We tried to call the General Manager to arrange a meeting but were unsuccessful.

We had a false report that the airport had opened and made a trip out with our luggage only to find out that some one had made an error.

Aug 19 Saturday—Airport is open again for UNPROFOR flights only. We took the second one, an IL 76. The coffin carrying the body of a French soldier was in the cargo area between our fold down seats. The DART driver met us in Zagreb and helped us (Bill and I) get on the Austrian Air flight to Vienna. We only had a few minutes and just barely made it. Matters were complicated by the fact that we first had to get our tickets changed to the right day at a separate window and of course it was a slow line. The driver took our helmets and flakjackets which was a great relief. The weight alone was murder and the boarding process with "Maybe Airlines" required about 20 minutes of standing in a queue fully dressed with all our baggage which we personally carried onto the aircraft. Once on board we stashed it loosely in the open cargo area. We didn't hit any air pockets. Fortunately the heavy equipment was tied down. The Russian loading flight crew stayed out of sight. In Vienna I was able to continue on to Amsterdam. The late evening onward flight to Dulles that I had planned to take yesterday did not fly on Saturdays, so spent the night at the airport hotel.

Aug 21 Sunday—Departed Amsterdam on United Airlines flight 947 at 12:20 pm arriving in Dulles at 3:00 pm. Amsterdam, Vienna, Zagreb and Sarajevo are all in the same time zone. Spent the morning working on notes and report.