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**WARSAW STOCK EXCHANGE**

**CLEARANCE AND SETTLEMENT  
AUTOMATION ANALYSIS**

**Phase II**

**Draft Final**

**November 1, 1991**

*Price Waterhouse*



November 1, 1991

Ms. Sandra Frydman  
Project Officer, FSDP  
AID/PRE/EM  
Department of State  
320 21st Street, NW  
Room 3208  
Washington, D.C. 20523-0018

Dear Sandra:

We are pleased to present the Draft Final Report, Warsaw Stock Exchange Clearance and Settlement Analysis, Phase II, prepared by a Price Waterhouse Team of Mr. Robert Dick, Mr. William Kirst and Mr. Richard Breen. The objective of this engagement was to evaluate the progress to date on recommendations made in Phase I of this assistance and to provide further recommendations on the future development of the Warsaw Stock Exchange.

We present, for your review, our recommendations concerning possible next steps for action by USAID/Department of Treasury and the Government of Poland. Our information is based upon interviews and extensive literature review.

We appreciate the opportunity to be of service to you on this important assignment. Please feel free to contact us if you require any further assistance.

Sincerely,

  
J. Richard Breen  
Project Director, FSDP

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## **EXECUTIVE SUMMARY**

### **Background**

The Warsaw Stock Exchange (WSE) requested the return of an expert in clearance and settlement systems to evaluate the progress to date on recommendations made in Phase I of this assistance and to provide further recommendations on the future development of the Exchange.

The United States Treasury, working with the Agency for International Development, commissioned Price Waterhouse's Financial Sector Development Project and Privatization and Development Project to provide this assistance.

The Price Waterhouse Consultant, Mr. Robert A. Dick, commenced a three week stay on September 22, 1991. While in country he consulted with the Chairman of the Warsaw Stock Exchange and Exchange Management on the progress of the Stock Market and recommendations presented to the Exchange on his first visit.

### **Scope of Work**

The scope of work drafted and accepted by A.I.D. contained the following:

The Price Waterhouse consultant returned to Warsaw for a three week period to advise on the recommendations made in the July 11, 1991 Price Waterhouse report and to provide further recommendations on the future developments of the Warsaw Stock Exchange. Specific areas the consultant was asked to advise in include:

- o Examining the progress on the creation of a viable Clearance and Settlement System and linkages to the Depository.
- o Reviewing improvements of the Clearance and Settlements System and the Depository, with specific reference to the changes recommended in the July 11 report and to any changes that may be recommended by the Securities and Exchange Commission and members of the Financial Services Volunteer Corps. and propose next steps that would be advisable to take in the process of automation.
- o Assessing the potential impact on the operations of WSE or the Depository of the announced proposals by the Ministry of Privatization to turn over 40% of the stock ownership of certain major state-owned enterprises to over 29 million Polish adults.

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## Constraints

The Scope of Work assumed that the WSE received the draft final report of July 11, 1991 containing recommendations made after the first visit to the Exchange. Unfortunately, the Stock Exchange Officials did not receive the report prior to Mr. Dick's arrival. Thus a portion of the Poland consultancy consisted of explaining the recommendations presented in the July 11 report.

Mr. Dick expected to be able to discuss the proposal presented by the Société des Bourses Francaises in detail with the staff of the WSE but found the report available only in French. As the report is confidential it could only be discussed in general terms. Since the agreement to use the French software is in final negotiations but has not been signed, the requirements of the WSE staff has not been finalized. Thus any recommendations made assume that the French proposal will indeed be implemented.

The Rules and Regulations of the WSE have been modified since the translation but not discussed with Mr. Dick. They are not available in English.

## Summary of Technical Assistance Provided

Meetings were held with Management of the Warsaw Stock Exchange to review the status of the current system and any future modifications scheduled. The recommendations made in the July 11, 1991 draft final report were also discussed.

The status of the French proposal and any other vendor proposals received since the consultant's last visit was reviewed. An assessment of the French proposal was conducted with the help of the WSE automation staff.

The consultant held meetings with the Ministry of Privatization, with the Director of the Ministry of Mass Privatization, the Project Manager of the Ministry of Capital Privatization, and the Chairman of the Securities Commission.

The Chairman of the WSE requested that the consultant assist in writing an overview of the WSE to be used for distribution to foreign investors. Along with this paper, the consultant suggested other ways to publicize the WSE, including an English summarized version of the weekly WSE bulletin to be distributed to the hotels and airlines.

The consultant conducted an assessment of the WSE's progress to date on the seven recommendations made in the July 11, 1991 report and on the automation of the Clearance and Settlement System and the Depository. Since the last report, not only has the French proposal for software development been accepted, but recommendations made on the procedures toward the integration of the Quotation system and the Depository have already been implemented. The development of the internal WSE system in the short term, such as the processing of multiple issues on one computer terminal, is expected to be implemented shortly. Progress has been made on the development of back up systems and

the creation of trading reports. A detailed outline of the consultant's recommendations following Phase II of the WSE consultancy are presented in section IV of this report.

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## **I. CURRENT SYSTEM OPERATIONS**

The Warsaw Stock Exchange (WSE), a joint stock company, was founded by the Treasury. Its powers are executed by the Ministry of Ownership Changes through the Minister of Finance. The Exchange's purpose is to carry on the business of public trading in securities. The Exchange also operates the National Depository of Securities, where accounting records of all securities listed and traded on the Exchange are maintained.

The Exchange was established by the Securities Act of April 1991. Under this legislation the Securities Commission was also established to govern the admission of securities, disclosure, investor protection, fair trade, competition in public trading, prospectus and licenses for brokers and brokerage houses.

Stock Exchange Management directs the business and manages the assets of the Exchanges. It consists of three members: the President and two members of management elected by shareholders in the General Meeting.

Members of the Stock Exchange are brokers or brokerage houses. They are shareholders of the Exchange and conduct stock exchange transactions. The Board of the Stock Exchange allows brokers into operation on the stock exchange if the broker house:

- o is a legal body possessing an office in the Republic of Poland,
- o employs at least three brokers for stocks, (Partners or members of the authorities of the broker house are included)
- o and gives a guarantee of safe and correct circulation of stocks and shares.

All members of the Stock Exchange are obligated to conduct their activities in accordance with the regulations of the law, stock exchange traditions and on the principles of scrupulousness, loyalty and impartiality with respect to participants of stock exchange circulation.

Members of the Stock Exchange operate at trading sessions through their employees, referred to as "stock exchange brokers". The broker is under contract to the brokerage house and handles all operations on the exchange floor. The Exchange must approve the broker's application. This application includes the Stock Exchange member agreement and guarantee that the broker will uphold the rules and regulations of the Stock Exchange. The broker must meet the following qualifications to be admitted to the Exchange:

- o possess a permanent place of residence in the Republic of Poland
- o be fluent in Polish

- o be on the list of brokers kept by the Securities Commission, and
- o have an acceptable reputation, knowledgeable and professional experience.

All former restrictions on foreign ownership have been removed. Foreign entities can even become brokers.

The Stock Exchange Board consists of 12 members, six of which are appointed by shareholders in the General Meeting and the other six appointed from among issuers, investors, and representatives of trade chambers and financial institutions. The Board of the Stock Exchange supervises the members of the Exchange with the aim of ascertaining conformance to all activities within the rules and regulations of the Stock Exchange. Supervision includes:

- o the financial protection of the member, particularly the amount of capital and its proportions to the amount of operations conducted,
- o carrying out appropriate recording of stock exchange transactions and clearing of such transactions,
- o accounting and internal control within the sphere of the Exchange,
- o functioning of a risk protection system, and
- o upholding the principles of conduct with respect to participants of the stock exchange.

A specialist is a member of the Stock Exchange having the consent of the Securities Commission to acquire issuer stocks and shares on its own behalf and in its own account. With the agreement of the Board of Stock Exchange, the specialist will conduct the following activities: fixing the price for the day, increasing the liquidity of the market, assuring the continuity of quotations. All activities of the specialist are conducted under the supervision of the Management of the Stock Exchange or by the employees of the stock exchange, authorized by the Management.

### Quotation System

The brokers/banks take buy and sell orders from their clients and give them to the exchange specialists in the respective securities. There is a specialist for each security listed on the Exchange and their role is to match the buy and sell orders received for each session. A File Server PC is on the floor for the Quotation system.

The price of each company's shares can only fluctuate by + or - 10% from the price set at

the prior trading session. This gives price stabilization to the market. If there is an abundance of orders on one side of the market that would cause the price to exceed the 10% limit, trading would be suspended in that security. This 10% limitation does not apply to the first trading session in a security.

The day's price is set by the specialist who follows the principles of maximizing circulation, minimizing the difference between a purchase and sale, and minimizing the difference between the current session price and the price at the prior session.

The closing price of the day will therefore be established in such a way as to make sure the follow conditions are met:

- o maximize the value of turnover
- o execute the orders at the best price
- o execute all buy orders with a price limit higher than the day's closing price and all sell orders with a price limit than the day's closing price
- o orders with a price limit at the day's close can be partially executed or not at all, and
- o purchase orders with a price limit lower than the day's closing price and sell orders with a price limit higher than the day's close are not executed.

The number of shares bought and sold will always be identical. A specialist may intervene to balance the market by placing his own order for his own account. This will only occur in a stable market and must be approved by the management of the Exchange supervising the session.

Prices are published in the official bulletin of the Warsaw Stock Exchange.

### Clearing System

Once a trade has been executed, a contract note is produced that confirms the transaction. The brokerage house client receives a confirmation that the trade has been executed. The contract notes are sent to the member brokerage house by the Exchange specialists. They are checked against the original orders and are then signed and returned to the specialists.

The stock exchange members are required to have funds available in their accounts prior to trading for their customers. Securities must be in the members account prior to selling any shares on the exchange.

The stock exchange members will work with the Clearing House Bank, SLASKI, to process

financial transfers between member accounts to settle all transactions. Once the money balances are cleared the securities are moved through the National Depository of Stocks and Shares.

### The Depository System

The National Depository, a central depository run by the Stock Exchange, provides overall control of all securities traded on the Stock Exchange. Each member of the National Depository has an account where all the share balances are maintained in book entry form. There are no share certificates issued.

All settlement of shares traded occurs three days after the session in the central depository. The Warsaw Stock Exchange has a fully automated settlement system. Transactions are settled electronically after execution and confirmation of all contract notes. Money is moved through the Clearing House Bank between accounts and the securities are moved through bookkeeping entries in the Depository system.

Currently, the trading, clearing and settlement systems of the Warsaw Stock Exchange are fully computerized. The Exchange network allows for integrated processing and control of securities data. The Exchange Trading System processes buy and sell orders for members, and calculates the closing security prices during the trading session. Trades are executed at the closing price and contract notes are automatically produced.

All orders not executed are stored in the trading data base for future trading sessions. Executed trades automatically pass to the Clearing and Depository System for settlement processing.

The new computer system under development, based on the Lyon Stock Exchange Trading System, will be expanded to include all clearing and depository functions.

### Controls

All brokers must pass the Securities Commission examination in order to obtain their brokers license. In the future the Broker's Association will administer the exam.

The closing prices at each trading session must be approved by the management of the Stock Exchange. The closing price is calculated based on order flow within a range of 10% from the previous session close.

All executed orders and the associated contract notes are maintained in the Trading Data Base. This file and all systems files are backed-up daily. Only certain management employees are allowed access to the computer system.

The Depository books and records are safeguarded in the computer and in the depository

vault. All processing is backed-up on a daily basis with weekly files kept in historical archives.

The Exchange and Depository are serviced by an outside security firm. Located at the former Communist Party Headquarters, the building is guarded for 24 hours a day. The Exchange has a separate department for auditing its members. This department is also responsible for ongoing surveillance of all accounts.

## **II. PROGRESS TO DATE**

Currently there are eight companies on the WSE. The companies cover a wide array of business in Poland, including textiles, construction, breweries, furniture manufacturing, glass works, cables, and electronics. It is estimated there will be ten by year end, one to be added by the end of October 1991. Total value of shares traded was over 10 billion zlotys. The WIG index was at its lowest at 66.9.

The Warsaw Stock Exchange sessions take place regularly on the floor of the exchange. Currently trading occurs on every Tuesday between 9:00 am and 2:00 pm. Plans for more frequent trading sessions are under way and will be increased to two days in 1991 and possibly daily in 1992.

Supervision of all exchange proceedings is carried out by the Management of the Stock Exchange. All trading is monitored and in case of any disputes there is immediate intervention by the person supervising the proceedings. The resolution is final and can not be appealed.

Currently, the trading, clearing, and settlement systems are fully computerized. A separate PC is used for each of the 8 securities traded. The WSE is planning to implement a program that will process multiple securities on one PC as recommended. Depository books will be kept manually as a parallel operation for a few more weeks.

Back-up disks are used for all open orders and executed trades. Also, contract note reports are now produced with more than one trade on each report.

SLASKI, a new Clearinghouse has been selected to replace the National Bank of Poland. There are no automated interfaces to the clearing bank. Thus far, this is not a problem because trading is only in the thousands of dollars. All money is in the broker and bank accounts at the clearing house before trading.

Contracts for different parts of the privatization project, headed up by Warburg have been given to:

- o Arthur Anderson: Lead accounting firm. Financial statements and prospectuses.
- o Warburg Ltd.: Investment advisors. Portfolio record-keeping and managing the funds.
- o DRT (Touche Ross): Design of the voucher system.
- o Price Waterhouse: Coordination, selection and management of outside

- o Price Waterhouse: Coordination, selection and management of outside consulting firms.

The Ministry of Privatization is awaiting the completion of a feasibility study recommending the new system (expected by the end of November 1991) before completing the design of the mass privatization program. When implemented, the program will entail the distribution of certificates to Polish adults. These certificates will establish ownership in the National Management Funds and will not be marketable for eighteen months. What effect this will have on the Warsaw Stock Exchange is not clear: It seems that initially only the funds will be listed on the exchange. Since no final plan has been presented to the Parliament, everything is on hold.

The WSE is considering adding bonds. Presently, the programming is completed but has not been tested. The proposed French system may not include the bond trading.

#### The Role of the Société des Bourses Francaises

The French proposal presented by the Société des Bourses Francaises to the Warsaw Stock Exchange is an 8 million french francs project for software development. The Lyon System, based on the Lyon Stock Exchange, will offer enough processing and storage to last 2 to 3 years. It will run on an AS/400 model D45. An additional machine will be added after three years to support greater volume and act as a back-up machine.

Implementation of the French system is expected to be in four phases. Trading on the Exchange is expected to be implemented by the end of the first quarter of 1992 and the Depository System is expected to be implemented by mid 1992. Along with the required systems the interface to the depository will be implemented and the main table and data base files will be created.

Training of personnel for the IBM AS/400 will be provided in Poland while part of the training on the Lyon System is expected to be provided in France. Currently, there are two staff people on the Warsaw Stock Exchange in addition to the Director, Mr. Magiera.

The Exchange personnel met with DEC in July to present an alternative proposal. DEC planned to obtain funding from the World Bank, enabling it to offer free software development and hardware to the WSE. DEC offered to rewrite the WSE system on the DEC hardware. However, the WSE chose not to respond to the offer since the specifications were not available. While the Exchange has not yet signed with the French, it is expected that they will do so in the near future. WSE anticipates that the Bourses will provide the necessary on-going support after implementation.

### **III. DESCRIPTION OF AN AUTOMATED STOCK EXCHANGE**

In discussions between the consultant and Mr. Rozlucki questions concerning the Warsaw Stock Exchange development were raised. Below is a presentation of the questions with the consultants detailed answers to each.

#### **WHAT SERVICES ARE AUTOMATED ON THE WARSAW STOCK EXCHANGE?**

It is important to note that the Stock Exchange started its operation offering only automated services. An automated exchange provides investors with highly efficient brokerage services and a fair trading market. Automation reduces operating costs, thus making funds available for reinvestment into market expansion.

Trading, the quotation system, and the automatic link from the clearing and settlement services to the Depository, offer investors a locked in processing system. This eliminates costly failures and loss of money and available securities.

The use of a book entry depository system allows the exchange to keep the records of the issuers fully automated. All account records in the depository are maintained in master files with daily back-up for security.

#### **WHAT DOES AUTOMATED TRADING PROVIDE?**

Automated trading and the Quotation System provide for fair and reasonable treatment of all investors. The broker can assure the client that his order will be treated fairly and that he will get the best execution price for his trade.

Confidence in the fairness of the trading system is essential for market expansion. Customers must be assured that no orders will be forgotten or lost in the trading session.

#### **WHAT IS THE BROKER'S RESPONSIBILITY IN MANAGING CUSTOMER ORDERS?**

The broker must receive the customers orders and instruct the specialist to enter orders them. The broker must ascertain that the customer has sufficient funds or shares in their account to satisfy the settlement of the transaction once executed.

The customer must get a confirmation of all executed transactions. The customer order will be tracked in the trading system to see whether the order has been executed or remains

open. At all times the broker must know his customer and make sure he meets all the Exchange requirements for trading.

#### WHAT DOES AUTOMATED SETTLEMENT PROVIDE?

Automated settlement means that the shares and funds are exchanged by bookkeeping entries in a central depository. A fully automated settlement system guarantees the settlement of executed transactions electronically without much effort on behalf of the broker.

By eliminating the certificate, significant dangers, due to false or stolen securities used for settlement, disappear.

Accounting records of the National Depository eliminate the need for brokers to spend many hours using manual methods or to invest heavily in multiple systems to keep security records. The net result in automated settlement is a reduction in cost to the brokers.

#### HOW WILL THE WARSAW STOCK EXCHANGE CHANGE WHEN THE NEW FRENCH SYSTEM IS IMPLEMENTED?

The new French system is scheduled to be implemented sometime in the second quarter of 1992. The system will allow the exchange to trade on a daily basis and be flexible for future growth. Many more companies will be able to list without any hardware or software limitations.

The software is being donated and developed by the French and will use the Polish exchange staff to help install and operate the system. Future modifications and enhancements will be made by the Warsaw Stock Exchange computer specialists.

The new software will be run on a new IBM AS/400 and will include new automated depository functions. The computer system will be large enough to accommodate current growth and the long range plans of the exchange.

#### WHY TRADE ON THE WARSAW STOCK EXCHANGE?

With the booming new markets in Eastern Europe opening up to foreign investors, an efficient and automated stock exchange can make the difference between success and failure in capital markets trading. By automating the Warsaw Stock Exchange and offering quality service and a fair trading environment, more foreign investors can be attracted to the market.

By decreasing the costs of the brokers and offering sound investments in good financially backed companies on the market, the cost of doing business on the Warsaw Stock Exchange will be beneficial to outside investors.

An automated, controlled, exchange trading and settlement system will provide a fair trading market. This will attract many outside investors to participate in the growth of capital markets in Poland and specifically increase trading on the Warsaw Stock Exchange.

#### **IV. RECOMMENDATIONS FOR FURTHER US/POLAND ACTION**

Mr. Dick outlined the following recommendations on the next steps to be taken in the automation of the Warsaw Stock Exchange. The first seven are based upon the recommendations made in the July 11, 1991 report while the last five are based on progress made on the WSE automation after July 11, 1991.

1. Implement a thorough review of the assumptions which form the basis of a strategic plan to develop the operations of the stock exchange and the depository. As of the completion of Phase II consultancy, a long term strategic plan has not yet been devised. The need for a strategic plan continues to grow as the Exchange expands and may require assistance.
2. Issue multiple invitation to bid: The SBF proposal has been accepted by the Warsaw Stock Exchange for the software development portion of the clearance and settlement systems. While a contract has not been signed, it is expected to be finalized in the near future. The plan will be implemented in four phases, to be fully operational by mid-1992.

An advisor may be beneficial to assist staff in implementing the IBM AS/400, in operating the system and in making any enhancements deemed necessary.

3. Integrate the Quotation System and the Depository: The continued development of the internal system to integrate the Quotation system and the Depository is advisable. As suggested, all trades are now considered settled on T+2 and will be automatically used to update the Depository system. Only the exceptions and corrections are handled manually.

The Depository books will still be kept manually as a parallel operation for a few more weeks. The system is backed up daily and once a month for historical purposes. Daily backups of all open orders and executed trades have been established following the recommendation in Phase I.

Contract note reports are now produced with more than one trade on each report, thus significantly increasing the efficiency of the system and the dealings with the brokers.

4. Conduct an Information Technology Audit: Currently, no information technology audits are being performed. While the Exchange has begun to draft operating procedures based on the French system, these need to be formalized and then translated from French to Polish and English. Audits are necessary in order to verify the operating procedures and to develop back up and recovery standards for the system. Moreover, an audit should be done to protect the books and records of the

depository. The team can aid in the development of a surveillance group to periodically audit the brokers. Also certain compliance reports should be required from the brokers.

5. Develop the internal WSE system in the short-term : Some of the internal automatic trading and settlement procedures presented in the first report have already been implemented. The new version of the Quotation system that allows for multiple issues to be processed on single terminals will be implemented following testing. This will benefit the exchange by limiting additional hardware investment for new issues.

Brokers should be required to give the Exchange orders on diskettes for auto entry into the trading system. PKO SA, the biggest specialist and broker, can not change its computer system to format the orders in the WSE format. PKO used an outside vendor to write their package for the computer and can not modify the system. The WSE programmers could be assisted in the creation of a front end program to capture the PKO format and translate it to the Exchange's format. The front end program would capture all the broker input and reformat if necessary. It would also check for outside viruses, guaranteeing clean file input. All new brokers coming onto the system would have to meet the WSE required formats.

An advisor could be used to meet with the brokers and discuss back office systems requirements to support a larger customer base. Thus far, the system has been updated based on the previous recommendations.

The current system must be enhanced to match orders received versus executed trades. Under the current system it is impossible to determine where the trades are executed from. Once matched, if the statistics are favorable, they can be a source of WSE public relations.

Similar to the French system the back up support, manpower and systems should be described in standard manuals.

6. Market the Exchange and brokers to the Public: The weekly bulletin of the Exchange now being produced should be made available to the public by distribution to the hotels and airlines. In future, the Exchange must continue to advertise the automated system to the public in order to build confidence in the stock market.

In order to promote the exchange to foreign investors, the explanation of the workings of the Exchange provided by the consultant should be completed. A brochure could be designed as well.

7. Provide regulatory reporting: The WSE needs to respond to requests from the Securities and Exchange Commission for regulatory reporting. After building their surveillance and compliance staff the Exchange can determine what reports are available from the new system and verify that they will meet Securities Commission and WSE requirements.

While the Rules and Regulations have been consolidated, they have not been translated into English. Therefore it is difficult for outside investors to gain a thorough understanding.

8. Define brokers and bank interfaces. After the French system is implemented, there will be a need for brokers and bank interfaces to be defined. The French system allows broker input and inquiry of the updated files. It does not include an automated external interface to the brokers and banks. Therefore, the brokers who are automated can not access computer generated files and reports. The WSE will have to build these interfaces.
9. Provide training on the new computer system. The hire of computer staff will be essential in order to train personnel on the new system and support the current computer environment. Specifically, staff will have to be versed in the working of the IBM AS/400. A separate advisor could consult the computer staff and the management of the WSE to give an objective view of the progress made and on the details of the planned new system.
10. Finalize and recommend the procedures for bond trading on the WSE. Implement any current system changes necessary to support the new procedures. Establish the changes necessary after the French system is implemented to support bond trading. There may be a need to run two systems.
11. Assist the Ministry of Mass Privatization in the establishment of a shareholder accounting system. The Warsaw Stock Exchange has not yet considered using the Depository for public shareholders. Currently, the brokers and banks are their clients and maintain their securities. Under the new system the brokers and banks will maintain individual shareholder accounts. Meetings with the Ministries of Privatization suggest that additional advisory help would be needed in the development of the shareholder system, particularly in the back office processing of the brokerage houses.

After the feasibility study is completed in the last week of November, the study should be analyzed to determine how the privatization program will impact the volume of trading on the WSE and therefore the programs effect on the hardware and system requirements.

12. Investigate and recommend the development of an alternative method for financing trades. Currently, traders are required to put money up front before trading. Advisors should work with the banks, the brokers, and the WSE to devise alternative requirements. This is in response to foreign investors objections to putting zlotys in the Polish bank prior to trading.