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Assessment of Responses of  
ALTERNATIVE DIAGNOSTICS, INC.  
of Missoula, Mt  
and  
FORTHIAN CORPORATION  
of Houston, Tx  
to  
Request for Interest  
issued by  
Bureau of Private Enterprise  
Agency for International Development

Assessment made by a Team of Retired R&D Executives  
Assembled by  
Energy Consultants, Inc.  
Washington, D.C.  
April 1987  
under Service Order 43TANS700387  
National Technical Information Service  
U.S. Department of Commerce

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Washington, D.C.

April 1987

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## Conclusions and Recommendations

The consensus of the team is that the Advanced Diangostix testing device and the Forthian hog cholera vaccine are good candidate products for development via an RDLP, followed by manufacture and sale in the subject ASEAN countries. The uncertainties, respectively, of market and of development status, can be resolved as the project proceeds. The fish vaccine could be a companion candidate if evidence of need can be established.

The remaining four Forthian products: a drug and explosive detector, a toposcopic catheter, an intravenous injection flow controller, and/or an improved NMR scanner, were all judged to be inferior candidates, for a variety of reasons.

It is recommended that Requests for Proposal be sent to Advanced Diagnostix, and to Forthian for the two vaccines, their Group I projects. The Forthian Request should emphasize the importance of establishing a need for the fish vaccine. It is further recommended that any attempt by Forthian to load on additional products as a means to insure success be resisted.

## Introduction

In early 1986, the Bureau of Private Enterprise of the Agency for International Development issued a Request for Interest aimed at organizations which might be interested and qualified to be a General Partner in forming Research and Development Limited Partnerships with private sector organizations in Thailand, Indonesia and the Philippines. These RDLP's were to focus on development of products or services in the fields of agriculture, animal health and human health. The AID offered support in the form of loans on favorable terms.

Of the numerous proposals received, two were deemed worthy of more detailed technical evaluation.

1) Alternative Diagnostix, Inc., of Missoula, Montana, in cooperation with Miramar Associates of Tucson, proposed the further development of an existing diagnostic system for detection of vaginal yeast, trichomonal infections, and possibly other infectious disease pathogens. It employs a simple device, suitable for office use by health practitioners, or even by the consumer at home. (Referred to hereafter as ADx).

2) The Forthian Corporation, of Houston, proposed the development of a slate of products, and emphasized the value of "safety in numbers" to enhance the chances of commercial success. The products included:

- (a) Hog Cholera Vaccine
- (b) Cold and Warm Water Fish Vaccines
- (c) Explosives and Drug Detection System for Airports and Embassies
- (d) Toposcopic and Retention Catheters for Urological Purposes
- (e) Intravenous (IV) Flow Control and Cut-off Device
- (f) As an alternate - Nuclear Magnetic Resonance (NMR) Scanning Equipment for Mammography

The Office of Program Review at the Bureau of Private Enterprise worked with the Department of Commerce in soliciting this further technical evaluation. The National Technical Information Service, Department of Commerce, through Mr. Frederick L. Haynes, engaged Energy consultants, Inc. of Washington. ECI is headed by Dr. Philip C. White, who, as a retired member of the Industrial Research Institute, maintains contact with many retired R&D executives from various industries around the country. This source has been used previously by the Department of Commerce to obtain independent technical expertise.

The assignment given ECI was to assess these two proposals against five designated criteria (as a minimum), using one or more teams of qualified individuals among IRI emeriti. See Appendix A, Statement of Work.

The team members, chosen from thirty individuals qualified in the technologies of concern, and/or in RDLP and joint venture arrangements, were:

Dr. Leonard G. Ginger, retired in 1980 from Baxter Travenol Laboratories, Inc. where he was Sr. Vice-President R&D. His specialties include: intravenous feeding, biomedical devices, bacterial chemistry, and biotechnology. See Appendix B for his report.

Dr. Sherman K. Reed, retired in 1985 from FMC Corporation, where he was Vice-President and Director-Chemical Technology. His specialties are: biotechnology and R&D joint venture companies. See Appendix C.

Dr. H. Fred Wilson, retired in 1983 from Rohm and Haas Company, where he was Vice-President and Chief Scientific Officer. His specialties are: agricultural chemicals, biotechnology relating to plants, and international chemical activities. See Appendix D.

Dr. Richard S. Schreiber, retired in 1970 from the Upjohn Company where he was Vice-President for Corporate Research. His specialties include biochemistry, plant pathology, and veterinary science. See Appendix E.

Dr. Philip C. White, retired from Amoco in 1975 and the Department of Energy in 1978, prepared this report, which was done in response to NTIS purchase order no. 43TANS700387, dated 4/9/87.

The members were asked to comment qualitatively, based on the designated criteria, as well as other criteria they deemed pertinent to such an RDLP and commercialization venture. They were also asked to assign a numerical grade of 1 to 5 for each of the seven total products, against each of the five criteria. This was done to provide the basis for quantitative comparisons, should this be necessary. Dr. Schreiber submitted a qualitative judgment only.

Members were also asked, per the Work Statement, to provide suggestions regarding a follow-on RFP, and their ideas about time requirements.

#### Assessment of Relevance of the Technology for International Commercialization.

The ADx diagnostic device is deemed durable and inexpensive, and the diseases for which it is designed are endemic in that region. Opinions on its salability vary, and that is the key point that must be established in an RDLP effort. It was rated at 4.5 out of a possible 5.0 (4.5/5). See Table of Rating Comparisons, below.

The hog cholera vaccine was deemed to have good value, but it appears to need further development. It was noted that its manufacture would be complex and capital intensive. Rated 4.0/5.

Fish are an important food, but no evidence was provided to judge the value of a vaccine. Rated 3.0/5.

The detection of drugs and explosives are needed in all countries of the world. Development of such equipment in ASEAN countries, however, rather than one of the industrialized countries, was deemed inappropriate. Rated 2.0/5.

The toposcopic catheter would be competing with many similar products which are widely available. It was judged to be not worth developing. It was also noted that some of the surgical procedures to which its use is directed are very advanced and complex. Rated 1.25/5.

The expert view is that the problems which the IV flow controller are designed to address are already largely solved with currently available equipment. While the device is admittedly clever, it is so simple that its manufacture could not be controlled in a developing country. Rated 1.25/5.

Nuclear Magnetic Resonance scanning is a very rapidly developing field, with strong competitors. The equipment is complex and expensive, and the ASEAN countries do not appear to be a suitable locale for its further development. Rated 1.5/5.

Assessment of Management Experience and Probable Success for Executing the RDLP on an International Basis.

ADx appears to be reasonably well grounded in international activities, although quantitative evidence is lacking. As noted above, success will hinge on whether such a device, which is just for diagnosis, will sell. Rated 3.75/5.

Forthian has a strong, well organized team in international business, with a demonstrated ability to raise money. It is not apparent, however, that it is a team with skills in managing technical development and commercialization. They appear to be seeking funding that will enable them to search for viable products in the LDC market. The funding mentioned is judged to be unrealistically low. Ratings are: Hog vaccine 3.5/5, fish vaccine 3.25/5, airport detector 2.5/5, catheter 2.75/5, flow controller 2.5/5, NMR scanner 2.0/5. The variation reflects views of probable success for the different products.

Assessment of Management's Prior Business Success in Less Developed Countries.

Both companies appear to have good ASEAN country contacts, with Forthian's clearly the stronger. Evidence of successful business experience, however, was not presented in either case. ADx rated 2.0/5, and Forthian rated 3.75/5, all projects.

Assessment of Potential Market Penetration for the Products Being Considered for Commercialization.

For ADx, the prospects are rated as good, since the need is there and the product inexpensive. As noted above, salability is the question. Rated 4.0/5.

The hog vaccine is seen as having good market value, and it should probably sell well. Rated 3.25/5.

There are no data given on which to assess the market for the fish vaccine. Rated 2.0/5.

A newly developed drug and explosives detector, not proven in the West, is not a good bet for the ASEAN market. Rated 2.25/5.

One member thought the catheter might sell, but would hardly be an attractive commercial venture. Rated 1.5/5.

For the reasons given above, the flow controller is not a promising market opportunity. Rated 1.5/5.

Essentially no penetration is seen in this market for a new NMR scanner. Rated 0.75/5.

#### Assessment of The Potential Access to Capital and the Resulting Benefits to the LDC and the Sponsoring US Organizations.

ADx appears to have adequate access to capital, but does not have the impressive track record that the Forthian group has. Their diagnostic device, in itself, would not appear to be the source of great benefits in either direction, but, as a relatively sure thing, it could be a useful door-opener for further bi-lateral developments. Rated 3.75/5.

Comments on the benefits were meager, but the arrangements Forthian showed for distribution of royalty income between AID and the General and Limited Partners appeared to be quite satisfactory. The ratings were: Hog vaccine 4.0/5, fish vaccine 3.75/5, airport detector 3.25/5, catheter 3.0/5, flow controller 3.5/5, and NMR scanner 2.25/5.

It must be recognized that under the new tax law, the attractiveness of investing in an RDLP has been diminished for the individual investor. There is no experience to date as to what the overall effect of this will be.

#### Comparison of Individual Ratings.

As a matter of record, the ratings assigned by each individual who made ratings are given on the following page for each product and each category. In general, the consistency shown enhances confidence in this approach as a supplement to the comments offered.

#### Suggestions for Follow-on Requests for Proposal (RFP's).

The follow-on RFP should require the proposer(s) to state clearly what further development steps are needed to insure that the product is ready for introduction in the ASEAN environment. The manufacturing facilities should also be defined, and what steps are proposed to acquire such facilities. The necessary market research studies should be described, including their timing relative to other decision points.

COMPARISON OF INDIVIDUAL RATINGS

Criteria	Technical Relevance	Experience Probable Success	Prior Business Success in LDCs	Potential Market Penetration	Access to Capital Benefits	Total
	<u>#1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	
Adv. Diagnos.						
Ginger	4	3	1	4	3	15
Reed	4	4	4	3	4	19
Wilson	5	4	2	5	3	19
White	5	4	1	4	5	19
	<u>18</u>	<u>15</u>	<u>8</u>	<u>16</u>	<u>15</u>	<u>72</u>
Forth. Hog Vaccine						
Ginger	3	4	4	3	4	18
Reed	3	2	4	2	4	15
Wilson	5	4	3	4	3	19
White	5	4	4	4	5	22
	<u>16</u>	<u>14</u>	<u>15</u>	<u>13</u>	<u>16</u>	<u>74</u>
Fish Vaccine						
Ginger	1	3	4	1	4	13
Reed	2	2	4	1	4	13
Wilson	5	4	3	4	3	19
White	4	4	4	2	4	18
	<u>12</u>	<u>13</u>	<u>15</u>	<u>8</u>	<u>15</u>	<u>63</u>
Airport Detector						
Ginger	3	3	4	3	4	17
Reed	2	2	4	3	4	15
Wilson	1	4	3	1	2	11
White	2	1	4	2	3	12
	<u>8</u>	<u>10</u>	<u>15</u>	<u>9</u>	<u>13</u>	<u>55</u>
Ret. Catheter						
Ginger	1	3	4	1	4	13
Reed	2	2	4	3	4	15
Wilson	1	4	3	1	2	11
White	1	2	4	1	2	10
	<u>5</u>	<u>11</u>	<u>15</u>	<u>6</u>	<u>12</u>	<u>49</u>
IV Flow Controller						
Ginger	1	1	4	1	4	11
Reed	1	2	4	1	4	12
Wilson	1	4	3	1	2	11
White	2	3	4	3	4	16
	<u>5</u>	<u>10</u>	<u>15</u>	<u>6</u>	<u>14</u>	<u>50</u>
NMR Scanner						
Ginger	1	1	4	1	4	11
Reed	1	2	4	1	4	12
Wilson	0	4	3	0	0	7
White	4	1	4	1	1	11
	<u>6</u>	<u>8</u>	<u>15</u>	<u>3</u>	<u>9</u>	<u>41</u>

In general, each task to be done should be identified, along with the personnel and facility and financial resources to be devoted to that task. There should be a cash flow projection which shows where the funds come from and when, how they are used, and how the General and Limited Partners receive their return. Prudence would suggest asking for an optimistic and pessimistic projection, to give a range for the cash flow.

Team member qualifications are already amply provided. What is not clear is whether there is to be a full-time manager, who that would be, and what his experience has been in technology development and commercialization. Heavy weighting should be put on the point.

#### Estimated Time Requirements.

The business arrangements are seen as requiring 6 to 12 months for ADx, and 9 to 18 months for the Forthian vaccines.

The R&D work will take longer and is more uncertain. ADx is estimated to need 12 to 24 months plus time for regulatory approval. The Forthian project estimates are 3 years, or 2 to 5 years, depending on the team member. The realism of the proposer's estimate of this development schedule should be a key point in the RFP evaluation.

Appendix A

STATEMENT OF WORK

Energy Consultants, Inc. will assess two R&D Limited Partnership candidates (Forthian Corporation and Alternative Diagnostix, Inc.) previously selected by AID and determine their probable commercial success in the international market. At a minimum, the assessments will address the following:

1. The relevance of the technology for international commercialization;
2. The management experience and probable success for executing the RDLP on an international basis;
3. Management's prior business success in Less Developed Countries;
4. Potential market penetration for the products/services being considered for commercialization; and
5. The potential access to capital and the resulting benefits to the LDC and the sponsoring US/Organizations.

The consultant will take the lead in formulating additional evaluation criteria as appropriate, and will work closely with the Office of Program Review (Bureau for Private Enterprise, AID) and the Office of Marketing and Customer Services (NTIS) throughout the contract.

To carry out this work, the consultant will assemble one or more teams of prominently-qualified persons from the IRI Emeriti to make the required assessment(s).

Team members will travel as necessary to the individual sites, or to meet together to ensure quality and consistency of the deliverables. Travel may be required to provide briefings to the Bureau for Private Enterprise. Work is to be completed within six months from issuance.

Deliverables:

1. Ten copies of each assessment, and
2. A recommended request for detailed proposals to be submitted by the selected organization(s) and a timetable for each.

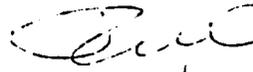
L. G. GINGER AND ASSOCIATES  
2100 Burr Oak Drive  
Glenview, Illinois 60025  
(312) 724-8211

Leonard G. Ginger, Ph.D.  
President

Consultants to Management

April 21, 1987

Dr. Philip C. White, President  
Energy Consultants, Inc.  
1812 Kalorama Square  
Washington, D.C. 20008

  
4/24/87

Dear Phil:

My evaluations of the Statements of Interest (SI's) and Technologies submitted by Alternative Diagnostix, Inc. (AD<sub>x</sub>) and the Forthian Corp. are enclosed.

Without question, AD<sub>x</sub> provided more information about the science involved in their technology than Forthian did for their technologies. The letter's presentation was a verbose and overwhelming opus aimed primarily at proving their management skills and capital acquisition capabilities, which actually were quite impressive.

In your letter you talked of Forthian's 59 page SI. What I received was 43 pages, but it all seemed to be there based on the Table of Contents. Their Appendix B. Material Related To Suggested Projects was a disjointed, relatively-poor support document for their SI. I have enclosed it for your inspection. Was anything omitted?

As you said, much of the grading had to be independent of the particular technology and, hence, it became subjective in part.

It was virtually impossible to comment on the proposed budgets or the time for completion of the R & D in view of the limited information on the status of the individual technologies and the absence of a listing of the specific R & D tasks required to bring the technologies to fruition in the ASEAN market.

I have enclosed my bill. Checks should be made payable to L. G. Ginger & Associates.

Sincerely,



Leonard G. Ginger

LGG:mrg  
encs.

PROPOSAL EVALUATION

Submitted by: Alternative Diagnostix, Inc. (AD<sub>x</sub>)

Technology: Antibody Based Detection Device for Several Types  
of Infection

Evaluation Scheme: Judged by five criteria listed in "Statement  
of Work" provided by Energy Consultants, Inc.  
(Grading: 1 to 5, with 5 highest)

Criterion 1- Grade assigned: 4

- a. It is stated categorically (p. 2) in the Statement of Interest (SI) submitted by AD<sub>x</sub> that a system already exists which "combines a simple test device with a self-sampling instrument" that is durable and inexpensive. If one accepts this premise, then it follows that the technology is relevant for international commercialization in the ASEAN countries singled out by AID where infectious problems such as vaginitis, trichomoniasis, giardiasis, etc. are endemic.
- b. A question must be raised as to whether the ASEAN country consumer has the necessary sophistication to conduct self testing.

Criterion 2- Grade assigned: 3

- a. The management team appears to have solid credentials and reasonable experience and capability in diagnostic technology (pp. 8, 9 and 10).
- b. Management experience and capability is attested to by reference (p. 7 and 8) to licenses and patents. However there is no definitive information on the magnitude of that success (commercial value). Is this to be accepted on faith?
- c. It is stated (p. 10) that presently there are no competitive diagnostic companies focusing on the transfer of such tests to the ASEAN countries. This augurs well for probable success.
- d. Management claims (p. 12) that the device and tests "have been endorsed by the Warner-Lambert Co." In what manner? Where is the evidence?

Criterion 3- Grade assigned: 1

- a. Various private sector business contacts are listed (pp. 5 and 6). There is no way to evaluate the business capability of these contacts. Some financial data would be helpful.
- b. Information concerning AD<sub>x</sub> personnel (pp. 8 and 9) shows no significant direct business experience in the ASEAN countries. Business experience in India is listed.

Criterion 4- Grade assigned: 4

- a. The proposed marketing study (p. 11) should identify the nature and size of the markets.
- b. If the test systems are effective, market penetration should occur. Giardiasis is a target disease but AD<sub>x</sub> has yet to demonstrate effectiveness of the symplistic system for sensing giardia.

Criterion 5- Grade assigned: 3

- a. It appears that the preferred route to acquire the \$ 750,000 of capital needed is by limited partnership sale. Attention must be drawn to the fact that the new tax law makes such investments less attractive to investors because any losses can only be used to offset income from other passive activities.

Time Table

- a. For RDLP business arrangements-- Allowing time for answers to some of the above questions: 6 to 12 months.
- b. For the R & D work-- Much of the R is already done; 12 to 24 months for the remaining R & D. The time for regulatory approval must be added on.

PROPOSAL EVALUATION

Submitted by: Forthian Corporation

Technologies: See Chart Below

Evaluation Scheme: Judged by five criteria listed in "Statement of Work" provided by Energy Consultants, Inc.  
(Grading: 1 to 5, with 5 highest)

GRADING CHART\*

Criterion	Technologies					
	A Cholera vaccine	B Fish vaccine	C Detection system	D Retention catheters	E IV flow con- troller	F NMR breast scanner
1	3	1	3	1	1	1
2	4	3	3	3	1	1
3	4	4	4	4	4	4
4	3	1	3	1	1	1
5	4	4	4	4	4	4

\*See attached evaluator comments on the six Technologies involved in the above grading chart.

Technology A

- a. Forthian's "Statement of Interest" (SI) gives no indication (p. 25) of the current status of R & D conducted by NovaGene, Inc. on hog cholera vaccine. Appendix B is only concerned with the vaccines that were developed to combat pseudorabies and rhinotracheitis. It must be assumed that the technique of corporate branding by deletion of the gene for the thymidine kinase enzyme is applicable to the virus that causes hog cholera.
- b. If the above holds, the technology is relevant and should be applicable to Asian cholera, but the figure of \$ 100,000 to produce vaccine for laboratory tests as well as other funding amounts are difficult to interpret without more information.
- c. The management team is well organized to cope with marketing problems and has adequate experience to assure commercial success if the R & D is successful.
- d. Capital acquisition by the R & D Limited Partnership route may no longer be so convenient. The new tax law makes such investments less attractive to investors because any losses can only be used to offset income from other\* investments.
- e. The mechanism described for distributing the anticipated benefits to the LDC and the sponsoring US organizations seems entirely satisfactory.

Technology B

- a. Nothing in the SI (p. 25) or in Appendix B touches on the status or purpose of the R & D on cold and warm water fish vaccines. There is no indication of the product goal or how it would benefit the ASEAN countries. Therefore, relevance is indeterminate.
- b. The various comments above concerning Technology A that relate to management and capital acquisition apply equally well here.

\*passive

Technology C

- a. Nothing in the SI (p. 26) or Appendix B deals with the advantages of the sensing systems that will be utilized to detect explosives or drugs. It is only stated that "Southwest Research Institute has developed experimental instruments." Therefore, it is impossible to make a judgemental comparison with existing systems. It is admitted that present systems provide good performance under normal inspection conditions but improved capability under adverse conditions is needed. A patented NMR system is mentioned but no information is provided.
- b. If this technology is any good, it ought to be exploited for the domestic scene first and not for commercialization in the ASEAN countries.
- c. The various comments concerning Technology A that relate to management and capital acquisition apply equally well here.

Technology D

- a. Appendix B provides a U.S. Patent diagram of a retention catheter for urological purposes. Urological retention catheters, e.g., the so-called Foley Catheter, are routinely available in many forms, sizes and shapes and are marketed world-wide by many major U.S. health care companies (Abbott, Baxter, Bard, Bectin Dickinson, Kendall, etc.) and numerous foreign ones. If there is an advantage to the proposed technology for urological catheters, it is not apparent. Consequently, relevance for international commercialization is questionable.
- b. It is more difficult to evaluate the toposcopic catheter which "literally rolls from the inside of an initial entry tube so as to prevent any sliding action as it penetrates interior portions of the body." It can then be employed for angiographic, diagnostic, chemotherapeutic and coronary uses. Many catheters for such uses are also marketed world-wide. What are the advantages of this toposcopic catheter? Is the ASEAN market sufficiently sophisticated for such commercialization?
- c. The various comments concerning Technology A that relate to management and capital acquisition apply equally well here.

. Technology E

- a. Appendix B states that the IV flow controller "could make air embolism complications or death caused by empty fluid bottles, a thing of the past." Actually IV fluid bottles are a thing of the past. Practically all IV fluids are dispensed domestically from flexible plastic units (Abbott, Baxter, McGaw) and there is no problem with air embolism. These companies market world-wide.
- b. The market place is ripe with IV flow controllers of varying degrees of sophistication that are also marketed world-wide.
- c. It is doubtful that the proposed technology would have any unique application in the ASEAN countries.
- d. The various comments concerning Technology A that relate to management and capital acquisition apply equally well here.

Technology F

- a. Appendix B discusses an NMR system that "uniquely analyses signals obtained from female breast tissue in situ." This diagnostic field is burgeoning extremely rapidly with a number of major companies (GE, Phillips, etc.) already commercializing diagnostic NMR instruments. Unless Southwest Research Institute has some unique advantages (not apparent), it is probably too late to compete with the existing technology.
- b. The proposed budget in the SI (p. 27) appears entirely inadequate for a project of this type.
- c. The various comments concerning Technology A that relate to management and capital acquisition apply equally well here.

*Sherman Kennedy Reed*  
*14 Sailfish Road*  
*Vero Beach, Florida 32960-5279*  
*305-562-2003*

Appendix C

April 19, 1987

*Enc -  
11/25/87*

Dr. Philip C. White  
1812 Kalorama Square  
Washington, DC 20008

Dear Phil:

Enclosed is a report covering Proposal Evaluations for AID/Doc. I have covered the criteria requested for use in evaluation, but feel it may be helpful to you for me to make a few comments that better express my views than will a table of numbers. The proposals were evaluated by assuming that the material presented is true, correct, and fairly represents the view of the proposers. Face to face conversations and then literature searches and consultations with technical experts in the fields would add useful backup.

Alternate Diagnostix, Inc. (ADx), has presented diagnostic technology and devices that appear to be largely developed, but require adaptation to the needs of a targeted market. Market studies are needed to target who would buy the product in the selected countries, and what his product requirements are. Two classes of customers are defined: Individuals and Health-care Professionals. It is not clear yet that there is adequate market from those who can pay in the chosen developing countries. A phased program would allow this to be explored. The ability to do the required work including raising funds, technological development, foreign business arrangements, market research, and management appears good. The funds required may be somewhat understated. This proposal deserves serious consideration.

Forthian lists several technologies which are

Appendix C  
S. K. Reed

not well described. This proposal is really a request to fund a search for commercially viable products which can find a market in Third World countries. The amount of money necessary to develop marketable products such as a hog cholera vaccine or a fish vaccine are very much understated. Nor is it clear who will pay for how much of these products. It is not clear what additional work is needed for Drug and Explosive detectors. However machinery for this purpose is most likely to be used first in developed countries and then in Third World countries. The I.V. flow controller is so simple that I question anyone's ability to adequately control a business based on this product. NMR screening is really high technology involving expensive capital equipment and large development costs suited to a General Electric or similar deep pocket. Forthian has gathered as associates, experienced business and legal people. They may be able to raise the necessary money. They have not shown the ability to manage the development of technologies they espoused. In my judgement, supporting Forthian as they request is a very high risk venture.

I am attaching a table as you requested in your letter of April 9. Also as an attachment, you will find your additional questions answered.

Thank you for giving me a chance to participate.

Sincerely,

*Sherman*  
Sherman K. Reed

CHART OF TECHNOLOGIES ---Letter to Dr. P. C. White 4/19/1987

COMPANY	ADx	-----FORTHIAN-----						
PRODUCT	DIAG SYS	HOG CHOL VACC	FISH VACC	DETEC DRUG EXPL	TOPO CATH	IV FLOW CNTL	NMR SCAN ALT	
CRITERIA								
TEC INTN COMM	4	3	2	2	2	1	1	
EXP RDLF INTN	4	2	2	2	2	2	2	
EXP LDC	4	4	4	4	4	4	4	
POT MKT LDC	3	2	1	3	3	1	1	
ACC CAP & BEN	4	4	4	4	4	4	4	

COMMENTS:

The Diagnostic System received high grades because it appears to be developed, requiring only adaptation. The market, the ability of the user to pay for the product and the cost per unit are all in question.

Hog Cholera vaccine requires extensive development, testing, and qualification with the involved government. Manufacture is complicated and capital intensive. The market is unclear. Skills in management of a program of this type is not evident to me.

Fish vaccine appears complex to develop, manufacture and market. Skills in this complex process are not evident.

Detectors of Drugs and Explosives are needed in the Developed Countries. The development of such complex machinery is not judged a suitable item for introducing first in Developing countries.

The Toposcopic catheter is an item that could be added to a medical equipment line. It would be very hard to justify selling alone. If it were good enough it might be sold by third parties. I question that it is economically worth developing.

The IV Flow Controller is a clever gadget. It would require extensive testing to be adopted and be impossible to protect from duplication in principle in Third World countries.

NMR Screening is not well enough described to allow me to make concise evaluation. However the equipment involved is expensive enough to require a highly developed and costly team for application. It appears to be not a suitable item for a venture of this size.

The development of the mixture of complex technological developments suggested by Forthian would require the research and development and commercial development skills of a large organization. These were neither budgetted nor were the skills listed as available.

ADDITIONAL COMMENTS: To letter of 4/19/1987 to Dr. P. C. White.

Added Information for Proposal. A plan which shows tasks to be performed together with financial and people and facility resources to be devoted to the venture. A Cash Flow Forecast which shows where and when the funds come from, how they are used, and how the General and Limited partners receive their return. This should be tied to the Task Plan. A great many people were listed as part time contributors to the project. Would there be a full time manager? Who would be in charge? I could not figure this out.

Reasonable Time Schedule: It would be reasonable to allow 9-12 months to establish the RDLP business arrangements. The R&D work depend very much on the specific technology. Not only is it necessary to do the technical work to identify the product but also the market requirement in the target country needs to be determined. The product may need adjustment. Market testing of the product is required. This process can start as soon as staff and funds are available. I could be expected to require from 2 to 5 or more years. The proposer's view of this schedule should be a key element of his proposal.

Wilson Associates  
P. O. Box 2152  
Cape May, NJ 08204

22 April 1987

Dear Phil:

Attached is my evaluation of the seven technologies according to the criteria requested. I felt that I had to add "supported by AID" to #1 and also consider in #4 and #5 its relevance to AID. I do not believe that the last four technologies are appropriate for AID support. If these technologies are successfully developed anywhere, they can be transferred to Indonesia, the Philippines and Thailand with minor modifications and limited local help. I am particularly negative on a project that requires sophisticated equipment such as NMR. These four projects should be able to attract financial support for development in the U. S., Europe and Japan. AID support would replace private support.

From the information provided neither company has any real experience in the target countries. Both list contacts and Post, Forthian, has international experience but I question whether it is relevant. This is a weak area for both but I assume AID expects that and the purpose of AID support is to increase the amount of expertise in U. S. companies in developing business in LDC's.

The ADx proposal is technically strong and has moderate risk. In addition to the question about their ability to operate in SE asia, there is a question about the market potential. Diagnosing a disease is only of benefit if treatment is available and will be used. Pharmaceutical companies have had trouble selling excellent drugs in LDC's. Part of the problem is the cost of the treatment and part is local customs. I suggest that this question be dealt with early in any project. It isn't how wide spread is the disease but will the treatment be used if fully successful.

The Forthian proposals are verbose, long on testimonial and short on facts. Yet they have good business experience including some overseas connections. The technology sections are very sketchy and need developing.

1. Hog cholera vaccine. Do they have an agreement with NovaGene to develop their patented vaccine in the target countries and under what terms? Who supplies the technologists? Can it be produced in an LCD? How would it be marketed? Since there should be a direct economic value from the treatment, it may not have the same problem as the diagnostic test.

2. Fish vaccine. Fish is an important food in LDC's so a fish vaccine may be of interest but there is no technology information to evaluate.

I have dismissed the other four technologies from further consideration.

I estimate that the RDLP business arrangements could be completed in 12-18 months and the R&D completed to the point of first sale in three years.

With best personal regards.

Yours truly,

A handwritten signature in cursive script, appearing to read 'H. F. Wilson', with a long horizontal flourish extending to the right.

H. F. Wilson

Proposal Evaluations for AID/DOC

	ADx	Hog Cholera	Forthian Fish Vaccine	Airport Detector	Catheter	I V Flow	Breast Cancer
1.	5	5	5	1	1	1	0
2.	4	4	4	4	4	4	4
3.	2	3	3	3	3	3	3
4.	5	4	4	1	1	1	0
5.	3	3	3	2	2	2	0

Appendix E  
Richard S. Schreiber

The following is a copy of a handwritten  
note received from Dr. Schreiber

Richard S. Schreiber  
The Marlborough  
471 W. South Street  
Kalamazoo, Michigan 49007

Friday, April 24

Dear Phil

Confirming our telephone conversation of today, I wish to inform you that I am much more impressed with the Alternative Diagnostix Inc (ADx) proposal than the Forthian Corp. I favor it for several reasons. 1) It works on serious infections in women. 2) It would definitely be more salable. and 3) I believe the business would be larger.

Sincerely

R. S. Schreiber