THE UNIVERSITY COLLEGE OF THE CARIBOO

Advanced Technology and Innovation Centre

Progress to October 31, 1996

Havind N. Sehmi
Senior Program Analyst
Technology Development and Transfer
Science and Technology Division
Ministry of Employment and Investment
Second Floor, 1022 Government Street
Victoria, B.C., V8W 1X7

December 9, 1996

Dear Havind:

Please find attached a copy of Advanced Techno' Innovation Centre's activity report comprised of a d[illegible] Centre's startegic initiatives, list of company contac[illegible] monthly reports for 1) technology transfer projects (Nova Woodbury), and 2) applied technology research (Lyle Killough) outlining progress to October 31, 1996 as required under the terms of the Conditional Grant Agreement #CC7760700. An annual report of ATIC will be prepared and made available along with the financial statement as required prior to March 31, 1997.

I trust the attached report meets the requirements of your office at the present. Please contact me at (604) 371-5532 if you require further information or elaboration.

Sincerely,

P. Webb

Paul Webb, Ph.D.
Director
Research Services, Industry Liaison and
Advanced Technology and Innovation Centre

cc. Len Juteau, Ministry Employment and Investment
Dr. Neil Russell, V/P Instruction

Advanced Technology and Innovation Centre

Progress to October 31, 1996

Background:

The University College of the Cariboo is a major repository of academic, training and technical expertise in applied industrial technology, business and computing, marketing and entrepreneurship, science and health sciences in the central interior of British Columbia. The Advanced Technology and Innovation Centre (ATIC) facilitates the linkage of this and other private and public sector expertise to business and industry.

ATIC has developed a partnership with industry in the transfer and application of technical knowledge to assist industry to be more productive and competitive. The Centre works closely with industry associations such as B.C. Wood Specialties Group and individual secondary wood manufacturing companies in British Columbia and is guided by a strong advisory committee to insure the Centre's work programs address industry's information, technological and business needs.

It has established a comprehensive network of scientific and technological expertise (Private Sector Technology Integrators, Research Institutes such as Forintek and , Centre for Advanced Wood Processing at UBC, FRBC's Value Added Skills Centre, other related University Expertise, B.C. Advanced Systems Institute, B.C. Science Council, B.C. Ministry of Employment and Investment, National Research Council - IRAP network, NRC Research Institutes, and Canadian Technology Network) linked to business and industry in a market driven, interdisciplinary team approach to provide relevant solutions to industry. ATIC has focused its activities primarily in computer automation and materials handling in value-added secondary wood products manufacturing, in fibre processing, in waste fibre utilization and in sustainable forestry and land use issues along with the growing alternate crop agricultural industry.

ATIC's technology transfer model involves an interdisciplinary team approach to providing solutions to industry's needs using new or current technology in novel applications and the use of local technology integrators to commercialize and transfer the technology to industry. For example, we have worked with Canwood Furniture Factory Inc. to install an automated timing system to a double-end tenoner that markedly reduced setup times. We are also currently working with B.C. Wood Specialties Group member companies to evaluate automation, process control and materials handling needs and to identify specific projects were application of this technology can assist the company become more competitive and profitable. ATIC sees an opportunity to support and develop local technology-based companies in providing services and technical assistance, for example, in low cost automation and materials handling to the growing value-added wood products sector. For example, Shortwood Systems of Kamloops have developed a automated short wood stacker to palletize trim ends for use in value added

manufacturing such as finger jointed products. At the present time the wood products sector is importing automation technology from Germany and other European countries . ATIC is offering a low cost alternative to these technologies and is playing a significant role in the development of an infrastructure of local technology integrator companies to support the advancement and competitiveness of value-added manufacturing in British Columbia.

Strategic Initiatives:

A) Alternate Crops (Medicinal Herbs)

There is a growing interest in the development of the medicinal plant industry. Currently this is almost overwhelmingly dominated by the ginseng industry, but there is interest in other plants such as feverfew as well. In British Columbia there is proven R&D capability in agronomy and natural products chemistry relating to medicinal plants. Within the Pacific Agri-Food Research Centre (PARC) there is some activity underway, with private sector support, at both Summerland and Agassiz. There is work being done in this area at the University of British Columbia and the University College of the Cariboo and there are companies and producers' associations such as the BC Association for Regenerative Agriculture, the Canadian Herb Society, and the Association of Ginseng Growers of BC. At PARC we have had discussions with potential Chinese partners who are interested in collaborative work on medicinal plants.

In August, 1996 Neil Russell and Paul Webb of UCC, and Joe Mazza and Gordon Neish, Director, PARC at Summerland discussed the fragmented approach to the development of this sub-sector of the specialty crops sector in the context of the potential desirability of bringing key players and stakeholders together to discuss opportunities for the medicinal plant sector and how to take a more strategic approach to its development. There is a sense that this is an area of activity that may offer opportunities for significant expansion of high value crop production and that British Columbia has natural advantages with respect to production capability and access to markets.

The key question is: Are we missing, or at least failing to fully exploit, new opportunities for significant wealth and job creation in this area?

As a first step it seems that it would be worthwhile to bring together a small group of key players to discuss the issues related to the development of this industry. This meeting was held in Agassiz at the Agriculture Canada Research Station in September/96 and brought together key players in B.C. and other provinces to discuss the direction the industry might take. The industry needs a champion and none from government was forth coming.

A private sector alterative has been sought by Paul Webb and Peter Bellos and found with a consortium of four companies coming together with the University College

of the Cariboo in December 96 to undertake precommercial market research. The consortium is in the process of formalizing its structure and has engaged Andrea Gunner P.Ag. of Vernon to spearhead the initiative.

B) Value Added Wood Products

Forintek Canada Corp. is developing a new technical support group to focus on the technical needs of the secondary wood products industry in British Columbia. The objectives for this group include:

- undertake targeted technology transfer and research services for the secondary industry
- provide technical information and advice to enable secondary wood products firms to compete technologically
- provide in plant technical assistance
- provide access to worldwide information sources
- provide information on production technology, techniques, codes, etc. to respond to new value added product opportunities.

The proposed new group will build on existing strengths within Forintek and collaborate with other regional centres to compliment expertise. For example, new specialists would be added in lumber drying, wood machining, gluing technology and wood properties, and would focus on secondary industry needs in these areas. Other areas of need for secondary manufacturers include product testing, assessment of wood properties relative to secondary wood products, automation, materials handling and industrial engineering.

The activities of the new group will be directed by an industry steering committee and coordinated with other agencies.

It is proposed that ATIC further develop collaboration with Forintek in the areas of computer automation and materials handling to compliment the expertise at Forintek and offer the secondary wood products industry a comprehensive team approach to meeting their technological needs. This initiative will also build on ATIC's strengths in computer automation and materials handling by providing expertise in the following areas.

1) **Industrial Engineering**

Carry out plant efficiency analysis and manufacturing feasibility studies, assess plant layout, inventory control, scheduling of work, worker movement studies to minimize worker fatigue, etc.

This expertise will allow secondary wood product manufactures to determine economic feasibility of producing various products, assess equipment expenditures, increase production, decrease worker fatigue and increase productivity. It will insure that capital is not unnecessarily tied up in inventory and work is scheduled to meet demand and minimize set-up costs.

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2) **Process Control Software Development.**

Design and development of process control software will be used in the development of automated systems and will include data acquisition software, automated data processing and archiving, PLC and PC programming, data communication, equipment specifications, I/O requirements, graphical user interface programming, machine vision and voice recognition etc.

These skills will allow for the development of new automated machines, and/or retrofitting existing equipment to add automated control with the objective of improving productivity, reduced downtime, increased product quality, and improved worker environment.

3) **Instrumentation and Mechanical Device Development.**

Expertise will have the ability to design and develop specialized mechanical systems for the secondary wood products industry; design mechanisms to assess loads and strength of members; produce shop ready designs of mechanical systems, knowledge of conventional and composite materials, and basic wood characteristics. Will have an understanding of static and dynamic systems, and current processes and equipment in the secondary wood producing industry. These skills will be linked to a background in instrumentation including a knowledge of sensors and actuators, and their interface and control.

This expertise will be located at ATIC at UCC in Kamloops. The technical specialists will coordinate their activities with the expertise proposed by Forintek to form a comprehensive Technical Support Group as described in Forintek's proposal to FRBC.

C) **Non Tenant Based Business Incubator:**

ATIC prepared a proposal to establish a non-tenant based busisness incubator for technology based companies. It would build on the strengths of UCC, Community Futures, Busness Development Bank and involve the faculty of UCC's Business School to deliver the necessary incubator services to technology based businesses in our region. The proposal has been submitted to B.C. Ministry of Employment and Investment for funding.

The University College of the Cariboo (UCC) plays a significant role in providing educational, social and cultural opportunities for the communities it serves in the Central Interior of British Columbia. UCC also plays an increasingly significant role in regional economic development by providing faculty expertise and services to meet the technological and business needs of business and industry in the region. These technology transfer and business functions are coordinated through the Advanced Technology and Innovation Centre (ATIC) that links business and industry to relevant scientific, technical and business expertise including faculty from the Divisions of Science and Health Science, Applied Industrial Technology, and Business, Computing and Mathematics including the School of Business.

UCC has become aware of a number of issues associated with the transfer of new and advanced technologies to business and industry. In the first instance, established

companies often experience difficulty in realigning their operation with new technology opportunities. The major effect is in being able to commercialize new products particularly when the product varies somewhat from the firm's conventional business practices. Consequently there is a need for additional managerial / entrepreneurial knowledge and support.

A second consideration is that start-up companies do not, in general, enjoy an encouraging future prospect. Statistics in Canada and the U.S. indicate that 80% of all new start-ups fail within five years. On the other hand, those companies that have received assistance in an incubator program have shown a remarkable 65 - 80% success rate after five years. A further example is the successful BCIT "Venture Program". The program brings emerging entrepreneurs into a three month immersion program then works with its participants through on-going counseling and networking that includes successful alumni. Their success rate is 80% of those who go on to establish their own ventures.

A typical incubator (there are over 500 in operation in the US and Canada) comprises a building with offices and, in some locations, light manufacturing/warehousing space which are leased to new start-up ventures. At this facility, often referred to as a "business development centre", budding entrepreneurs receive direct and on-going support in three areas:

1. technological support, education, testing facilities etc.

2. managerial support, training, consulting, advisory, networking with other managers
3. office services, fax, telephone, internet, photocopying, etc.

The proposed Non-Tenant Technology/Business Incubator (N-T T/B-I) will provide the first two of the foregoing both at the candidate company's premises and at UCC.

The proposed pilot is seen as providing the input that would normally be available in an incubator, or through a "venture program". However, the unique aspect of the pilot is that is would operate "without walls", as it were, in assisting venture success. In this context, the incubator would deliver the needed services to chosen incubator companies at their place of business. It sees its purpose as indicated in the following Mission Statements.

The perceived mission for the proposed incubator is to

- support regional economic growth by nurturing start-up ventures and fledgling technology companies.

- provide business development training and support services, and the availability of technology facilities and information networks to assist potentially viable projects and

companies intending to develop high tech, and/or value added products, services and/or processes.

- enable regional firms to emerge with significant competitive advantages in the commercial technology market place which will strengthen their impact on the economy of the Central Interior Region as successful manufacturers, suppliers and employers.

List of Projects and Company Visits:

COMPANY NAME	PROJECT TITLE	PARAMATERS
ABEDA	Automation Evaluation	Overview of their secondary wood moulder plant to determine where improvements possible to increase productivity - part of BCWSG
ABEDA	Primary Breakdown Layout	Detailed floor plan, productivity analysis and product flow layout for the primary breakdown area of the facility
Barrett Manufacturing	CTN	Met with to discuss the possibility of designing a computer automated machine for the production of chaplets
BC Lottery Corporation	HOMR Rollers	Student project proof in concept to determine if cleaning the feed rollers used in the lottery number reading machine was possible
BC Ministry of Agriculture		Included in a proposal to do a detailed study of the alternate crop industry in the interior of BC
Bell Pole	Automated Pole Framing Machine	Detailed designs are being done in the development of an automated pole framing machine
Bigfoot Campers		Negotiations are under way to assist the company in a number of areas including the design of a process to manufacture cabnetry
Camco		Proposal to assist with the production of a new process to make carbide tips used in saws
Creative Connectors		Discussed ways of introducing jigs and fixtures to improve the manufacuture of wood shelves; a

COMPANY NAME	PROJECT TITLE	PARAMETERS
		proposal was done to do a manufacturing feasibility study; and a shop layout for a new location
Del Schneider		Are doing a literature search on wrapping systems for lumber and are putting together a proposal to assist with the design of a fully automated wrapping machine
Dinoflex	Separation of Rubber from sand	Several methods were proofed out to determine the best way to separate ground up recycled rubber from rocks and sand
DSM Automation		Technology integrator with whom we assist with electronic design and components
Exco		Discussions are ongoing to assist in the development of a portable debarking and chipping machine.
Freshwood Farms		Contract negotiations are under way for the analysis of active ingredients in Echinacea
Goldsmith Doug		Provided information on machines capable of doing 3-D carvings of gold. He has contacted technology integrators we recommended that are capable of putting a system together and is in the process of building it
Goreman Brothers	Automation Evaluation	Did an automation evaluation at their West Bank saw mill. Followed up with implementation recommendations
Habitat Farms		Met with to discuss the possibility of taking the original prototype of an automatic raw wool 'sewing' machine to the next stage
HPLC	Integrator	Student project to develop a machine capable of capturing raw data from the HPLC and allowing the scientists to do detailed quantitative analysis
Inland Glass	Skylight Computer program	A computer program was developed to generate cutting information for the manufacture of skylights. This program will, in the future, be interfaced with an automatic chop saw for a totally automated system
Kamloops Rock Shop	Rock Carving Machine	Design and proof in concept for a computer automated 3-D alabaster carving machine

COMPANY NAME	PROJECT TITLE	PARAMETERS
Klee Products		Technology integrator with whom we provided information on machine development and design and technical services
Kortec Systems		Technology integrator with whom we assist with technical information and design ideas
Kodiak Research		Proposal to develop an automated drilling machine to assist in the production of the aluminum support poles used in ultralight airplanes. Also discussed helping with the computer control of a routing table under design
LaMarch Windows		Met with to discuss industrial engineering possibilities and assistance with the production of vinyl clad wood windows
Lignum		Met with to discuss the possibility of doing a lumber yard efficiency study and developing machinery to be used in the harvest of small wood
Master Formulae		Analysis for Echinaceosides plus the possibility of doing an Industrial Engineering study of their manufacturing facility
McIsaac Systems Integration		Technology integrator with whom we provide information of electronic design and components
Moly-Cop	Automatic Cracked Ball Sorter	A system was developed, and is in the process of prototype building, to automatically differentiate between cracked and good iron balls made for the mining industry.
New Life Development Corporation		Connected them with a technology integrator capable of providing programming expertise
Pacific Bentonite		Submitted a proposal to FRBC to do a pulp waste feasibility study
Penticton Countertops		Discussed design for an automatic leveling system to be used in the production of cast countertops
Precision Arbour		Negotiations are under way to assist in the development of a vibration monitoring system to be used in the saw mill industry which will continuously monitor bearing wear and saw sharpness and alert operators at the first sign of trouble. We are also assisting the company in the application of its new

COMPANY NAME	PROJECT TITLE	PARAMETERS
		arbour design.
Pro-CIR		A proposal was submitted to develop a jig and a new process to efficiently do the finishing work on the plastic frame for the emergency doors used in Western Star's trucks
Rough Country Manufacturing		Provided electronic analysis and connected them with a technology integrator capable of solving their problems.
Silva West	Notching Automation	Designed a fixture for their fence post machine which would notch the top end
Simon Says Recovery		Met with to discuss their proposal to recover usable wood from waste slabs at sawmills that is currently being chipped
Sonax		Proposal to develop a machine to automate the production of a wooden corner cabnet
Structurelam		An Automation Evaluation proposal was given along with the possibility of developing a turn-key framing machine for their post and beam package
Thompson Guitars		Assisted with the design of an automatic carving machine capable to producing guitar necks with a minimal amount of hand finishing required
Tomco	Automation Evaluation	This pre-fab Japanese house builder needed to improve plant efficiency. An assessment for low cost improvements was made along with automation recommendations
Unit Electrical Engineering		Proposal for wireless and high resolution open pit mining equipment
Valley Fibrebath		Negotiations are under way to do a proof in concept for an electrostatic chopper gun. The aim is to reduce the amount of waste chop experienced in the fibreglass industry
Vernon Kiln & Millwork		Met with to discuss doing an automation evaluation as part of BCWSG and assisting with the redesign of their moulder operation
Western Industrial Clay		Proposal to assist with the redesign of their 'kitty litter' mill

COMPANY NAME	PROJECT TITLE	PARAMETERS
Western Woodlot	Bandsaw Deflection	Student proof in concept to measure saw blade deflection of a band saw to determine optimal tooth configuration

List of Projects:
Economic/Socio-economic Impacts:

Company Name	Project Title	Project Description	Expected Benefits to Company
ABEDA	Automation Evaluation	Overview of their secondary wood moulder plant to determine where improvements possible to increase productivity - part of BCWSG	Increase in the amount of product can move through the plant and decrease in worker fatigue Savings of $15,000/yr on implemented changes
ABEDA	Primary Breakdown Layout	Detailed floor plan, productivity analysis and product flow layout for the primary breakdown area of the facility	increase throughput from 12 mbf to 20mbf - a 67% increase. Cost decrease of $60,000 and sales increase of $200,000
BC Lottery Corporation	HOMR Rollers	Student project proof in concept to determine if cleaning the feed rollers used in the lottery number reading machine was possible	If implemented, a potential savings of $50,000 per year in materials plus $20,000 in labour
Bell Pole	Automated Pole Framing Machine	Detailed designs are being done in the development of an automated pole framing machine	Savings in production and operations: first year: $120,000 jobs 2 sec year: $125,000 jobs 1 third year: $130,000
Dinoflex	Separation of Rubber from sand	Several methods were proofed out to determine the best way to separate ground up recycled rubber from rocks and sand	If implemented, would save the company $25,000 in repairs and down time
Goreman Brothers	Automation Evaluation	Did an automation evaluation at their West Band sawmill.	If implemented, would save the company $30,000 per year
Inland Glass	Skylight	A computer program was	Sales would increase due to better

Company Name	Project Title	Project Description	Expected Benefits to Company
	Computer program	developed to generate cutting information for the manufacture of skylights. This program will, in the future, be interfaced with an automatic chop saw for a totally automated system	competitive position - translates into increased sales of $500,000.
Kamloops Rock Shop	Rock Carving Machine	Design and proof in concept for a computer automated 3-D alabaster carving machine	Potential income increase of $300,000, a 75% reduction in the cost of producing each carving and 6 new jobs
Moly-Cop	Automatic Cracked Ball Sorter	A system was developed, and is in the process of prototype building, to automatically differentiate between cracked and good iron balls made for the mining industry.	Cost savings in labour and materials estimated at Moly-Cop and associated companies is $350,000 per year
Silva West	Notching Automation	Designed a fixture for their fence post machine which would notch the top end	Open up new market, and increase sales which translates into $25,000/yr
Tomco	Automation Evaluation	This pre-fab Japanese house builder needed to improve plant efficiency. An assessment for low cost improvements was made along with automation recommendations	Increase in productivity of 25% which will result in a labour savings of $30,000/yr
Western Woodlot	Bandsaw Deflection	Student proof in concept to measure saw blade deflection of a band saw to determine optimal tooth configuration	Increase in sales by $15,000

Other Biological Projects:

Gambrinus Malting

Gambrinus, located in Armstrong, is a major producer of malt for the brewing industry. They have a problem with disposal of their seep water (high in organics) and need to reduce the BOD to dispose of it. ATIC has contracted with the company to provide 1) recommendations for modifications of their current aerated lagoon system and 2) to provide an option for the complete recycling of their waste water. We are working with Dr, Victor Lo, UBC BioResource Engineering, who is the principle investigator on the project. Contract: $7400 levered through IRAP

Chase

We have been working with David McLernan to assist him to grow his consulting company, **Forest Health Services**. He has been involved with the village of Chase to help them develop alternatives to their problems in waste management. We have connected him with Dr. Victor Lo ,a waste treatment specialist who has developed various technologies that David's company can commercialize, and who will work with his company to provide the evaluation and assessment work necessary to make recommendations to improve the waste treatment for the village.

Okanagan D-C Services

Contracted with Dr. Tom Gordon's company to develop the extract and purification methods to produce commercial quantities of ginsenoside extracts from ginseng berry and leaf tissue. This work was undertaken by Drs. Ron Smith and Sharon Brewer and employed a recent graduate of UCC, Rob Colistro. The first phase of the work is just completed. Contract $10,000 levered through IRAP. The second phase ,to scale up to commercial production, is being developed and will be an RDA with IRAP for approximately $70,000.

Ginseng Garden

Ron Paulson received funding from Min. of Agriculture, Fisheries and Food and inkind contributions from Canadian Imperial Ginseng and Kamloops Ginseng to establish a ginseng research garden on campus.

Kamloops Ginseng Products Ltd.

Debra Lees, Marketing Consultant, undertook a needs analysis of internet marketing for the company in an attempt to increase sales of value added products. Doug Baleshta is current involved in modifying their www pages according to the marketing recommendations.

Master Formula

This company located in Westbank, produces naturepathic medicines for naturepaths physicians. We are looking at developing methods to allow for standardization of their herbal products. Initially this will involve chemical analysis of echinacea and later on over 30 different herbs that they deal with. Drs. Ron Smith and Sharon Brewer are currently developing the proposal for the initial contract. The principles of the company was on campus June 26, to tour our science labs and access our capabilities for undertaking the work. We anticipate we will be able to develop a close working relationship.

Norwest Laboratories

Dr. Ron Smith, Sharon Brewer and Ron Paulson are collaborating with Norwest Labs and Kamloops Ginseng in a Technology B.C. proposal to examine the effect of mineral nutrition on biomass production in ginseng and content of ginsenosides in plant tissue. We will do the ginsenoside analysis, Norwest will do the nutrient study and

research plots will be established on Kamloop Ginseng's gardens and UCC's ginseng research garden. Results of the Tech B.C. regional competition will be known in July/96. Overall budget approx. $60,000

Monthly Reports:

Monthly progress reports are detailed below. The reports are comprised of Nova Woodbury, Project Manager's progress reports from April, 1996 to October, 1996 and Lyle Killough, Research Technologist's progress reports from April, 1996 to July, 1996. The requirement for Lyle's monthly reports was suspended as reporting of his activities was included within the Project manager's report fron August, 1996 on.

ATIC APRIL REPORT

(April 17-29, 1996)

SUBMITTED BY: NOVA WOODBURY

SCIENCE PROJECTS

Met with Sharon, Ron and Sherri to discuss science projects (Tom Gordon, Master Formulae and others). Had a telephone meeting with Master Formulae to discuss scope of the project and what they want. They were to attend an information meeting in Utah to gather more information on what is available and what they need us to do. We need to do a follow-up to determine if a project is still possible.

Toured the Science Lab with Peter B. Discussed their desire to have a computer hooked up to the HPLC to get more detailed data out. This will be useful for future project. Plan on having this as a student project.

WESTERN INDUSTRIAL CLAY

Put a letter of intent together with Lyle for managing the re-engineering of their plant. Met with Peter Aylen on April 29th to discuss requirements, scope of the project and ATIC's role. We contacted several engineers and other sources to see if we could put together a team. However, after much internal discussion, we decided not to go ahead with this project - too many potential dangerous variables.

THOMPSON GUITARS

Toured Ed Thompson's guitar shop - he hand crafts guitars which retail for around $2,000 U.S. His shop could use some organization, but Ed is most concerned about developing a machine to help him carve the neck of his guitars since this is a highly labour intensive step. We (Lyle, Peter, Ed and me) went with him to Kodiak to have a look at their duplicating carving machine to see if it would work for Ed's application. Turns out that is won't, but Kodiak's existing routing table may be of use. Need to do a follow-up visit.

KODIAK RESEARCH

Met with Brent Holomis to discuss the routing table he is designing for commercial sale and use. They are partially finished and are now looking for help and information on a computer controller for the table. Brent has a couple of sources, but they are expensive and he's looking at developing his own. Lyle provided some information, but requires more details on the table's specifications to ensure the electronic control doesn't act as a compensator for the mechanical short-coming (tolerances appear to be very tight - why?)

An unexpected outcome from the meeting was the possibility of designing a machine to drill and tap holes in aluminum tubing used in the manufacture of their ultralight airplanes. The application is very similar to Bell Pole's. Lyle put a rough quote together for them.

Although the drilling machine is of interest, Brent H. has a lot on his agenda and would prefer to spend time developing the routing table. We need to do some additional discussions.

MOLYCOP

Met with Molycop to discuss next phase of their project. They want to go ahead with the development of their Cracked Ball detector. Lyle put together a quote to develop the process.

ADDITIONAL

Attended meetings with Peter Scott, Henry Reiser and ATIC staff to discuss a number of different things. Gathered general information on projects and work expected.

ATIC MAY REPORT

(May 21-31, 1996)

SUBMITTED BY: NOVA WOODBURY

HPLC SCIENCE PROJECT

Met with Sharon, J.S. and one of his students to discuss hooking up the HPLC to a computer so they can get raw data out to analyze. J.S. sees this as a good 'real world' application and agreed to go ahead as a student project. Sharon is to put together a list of her requirements and 'wishes'. Lyle will oversee the work done.

WESTERN INDUSTRIAL CLAY

Received a phone call from Dallas Mowatt of **Target Products Ltd**. in Burnaby relating to palletizing machines. Passed his name on to Peter Aylen.

Target is a concrete company which does a lot of R&D - they have an electrical engineer and two mechanical engineers (one with a masters degree in robotics). They have developed a semi-automatic palletizer and are continuing to improve it and are looking at developing an automatic one (although there have been problems in the past doing this). Talked to Dallas Mowatt about ATIC and what we do here - sent him a letter and a brochure.

THOMPSON GUITARS

Dropped in on Ed Thompson to see how things were going. He is still quite interested in developing a machine to carve the necks of his guitars. There is a considerable amount of overlap in technology between his machine and one we are looking at developing for the Kamloops Rock Shop. He will be entering a slow period within the next month; so after our trip to Williams Lake, we will try to get him up here to do a 'brainstorming' session with Lyle, Henry and Knut.

KAMLOOPS ROCK SHOP

Kamloops Rock Shop is a carving and nick-nack store in downtown Kamloops. They are interested in developing a carving machine for their alabaster polar bears. They want one that is capable of reading off an original and making 4 copies at once. A meeting was held with Lyle, Henry and Knut to discuss design options - some interesting ones were brought up and they feel that it will be possible to design one for around 30-40K. A letter was sent to the Rock Shop outlining what ATIC can do for them and approximate project costs. They seem interested in going ahead, but have to arrange financing first.

KODIAK RESEARCH

Dropped in to see Brent Holomis, but he wasn't in. Will call him back once Lyle returns from vacation.

STRUCTURELAM

Structurelam is located in Penticton and laminates wood boards together to make structural beams in buildings. Their market includes putting together post and beam packages for the Japanese. They are not automated and are looking at different options to improve their operation. Lyle and Brent got together to discuss possibilities and feel that they would benefit from having a BC Wood Specialty Group Automation Evaluation and a turn-key framing machine for their post and beam package could be developed for around 60K. A letter was put together outlining how ATIC could help them.

SONAX FURNITURE MFG

Sonax is located in Osoyoos and manufactures stereo and TV cabinets. They are particularly interested in developing a machine to help with one corner cabinet they make which currently requires a lot of human intervention and ties up one of their main machines. Again, Lyle and Brent got together to discuss possibilities and feel that they would benefit from having a BC Wood Specialty Group Automation Evaluation and a dedicated, adaptable machine for producing the corner cabinet would cost around 35-40K. A letter was sent to them outlining how ATIC could help.

MASTER FORMULAE

Touched base with Barbara to see how they were doing. They are digesting information obtained from their trip to Utah and are still putting together their research requirements. They are hoping to come up to Kamloops to tour the labs and meet the scientists...failing that, we should at least have another telephone conference.

HARBERCRAFT

Called Byron Bolton to see how things were progressing. He is interested in developing a cutting machine but has a couple of issues that he needs to deal with first (staffing and funding). They are also considering moving to a new location (local) and may be interested in having a shop floor and scheduling system developed. He wants us to call him back in a couple of months.

WILLIAMS LAKE

Met with Lynda Wilson to discuss our trip to Williams Lake in June. Started making phone calls to set up meetings with Community Futures, Business Development Bank, and some local businesses.

QUICKTURN PRODUCTION MACHINERY LTD

Ran into a man who works at Quickturn - they are located in Vernon and produce C&C machines. Need to set up an appointment to tour their facility and see if they need our assistance and see what we can learn from them.

ADDITIONAL

Attended meetings with Sean Irvine from the Canadian Intellectual Property Office, and Carol Stewart from the Waterloo Innovation Centre

ATIC JUNE REPORT

(June 1-30, 1996)

SUBMITTED BY: NOVA WOODBURY

MASTER FORMULAE

Met with Barbara Johnston, Rob, Sharon, Ron and Paul and toured the Science Lab and other facilities. Discussed scope of the project and decided to proceed with the evaluation and analysis of echinacea first. Barbara and Rob will be gathering the analysis technique information along with the price of the standards. These will be supplied to the scientists who will then put together an analysis plan. Essentially what the project will involve is the identification of peak occurrences of the echinaceasides under different processing operations. This information will then be used to identify the best process to extract the active ingredients. Once this is successfully completed, ATIC will do similar type analyses for other plants Master Formulae uses.

KAMLOOPS ROCK SHOP

Met with the Kamloops Rock Shop to discuss the development of a carving machine for their alabaster polar bears. This project will proceed in a two step manner: the first step will be the design of the machine and the second step will be the development of a prototype for testing. They are very keen on moving ahead with this project as soon as possible and we will be putting together a contract with them in the beginning of July 1996.

SCIENCE LAB

Met with Sharon Brewer, J.S. Bourget and his student, Graham, to put together a plan for developing a method of capturing raw data from Science's HPLC machine. This will be a student project and is proceeding.

WILLIAMS LAKE

Went up to Williams Lake with Lyle Killough and Peter Bellos to meet with UCC's Linda Wilson and numerous local businesses. These businesses included: Mount Polley Mines, Gibraltar Mines, Silva West, Lignum, David

Jacobson, Community Futures and the Business Development Bank. We made several good contacts and have put together a design for a routing attachment for Silva West's fence post machine to allow them to take advantage of a new U.S. market. We were also given a number of leads to follow up on.

BARRETT MANUFACTURING

Met with Larry Barrett to discuss his needs. He is in the process of developing a lathe with will enable him to mass produce a steel component used in the Penticton Foundry. He is currently making them on an old, manual machine and will be able to keep up to the demand for another 8 months or so. He would like to have computer controls attached to the new lathe and will contact us when it is developed. The business is not doing well financially and they will be receiving marketing help through the Business Incubator program.

LaMARCH WINDOWS

Met with John Light and toured LaMarch's manufacturing plant. They make custom ordered vinyl and wood windows. They are interested in getting in to vinyl clad wood windows and making their own sealed panes. They are currently in their busy season, but are very interested in having us drop by for another visit to discuss how we can help them in redesigning their manufacturing process and developing these new products.

MARKETING STRATEGY

Started work on a manufacturing strategy to increase awareness of ATIC and identify clients. Initial efforts will be spent talking to National Research Council Advisors, Science Council reps, and identifying businesses and consultants who are likely to come across situations where we can be utilized.

B.C. LOTTERY CORPORATION

Initial contact was made with Cari Beckett to discuss the development of a new roller system for their ticket reading machines. The part currently used needs to be replaced a couple of times a year and results in high technical cost and down time for the machines. We will be meeting with her next week to discuss putting a project together and brainstorming about ways to alleviate the problem. This will likely be a project for Henry Reiser and his students.

MISCELLANEOUS

Bell Pole, Inland Glass and Molycop are proceeding.

Follow-up contact has been made with Structurelam, Sonax, Abeda, Thompson Guitars, Kodiak and Canwood.

Initial contact has been made with Valley Fibrebath and we will be meeting with them in July.

Spoke to Sabine Presch of IPS to arrange a meeting, a tour of our facility and to discuss potential projects with the centre. She was unable to make it and rescheduled for August. We do have a potential project with her other company, Dynoflex, which will involve Henry Reiser and his students. It regards the removal of stones from recycled tires and has a great deal of applicability throughout the recycled tire industry.

Met with Henry Reiser and toured his lab. Got a run down on what his students learn and the types of projects they've done in the past. Discussed working with him on future projects.

Met with Raj Atwal, a mechanical engineer from Vancouver, to discuss how we might benefit from each other.

Made numerous attempts to get hold of Duncan Morgan to discuss Camco and the potential for other projects. He has not, to date, gotten back to me.

ATIC JULY REPORT

(JULY 1-31, 1996)

SUBMITTED BY: NOVA WOODBURY

MASTER FORMULAE

Met with Barbara Johnston at Master Formulae's facility in Kelowna. They are experiencing a lot of growth and have recently obtained a loan from the BDC for expansion. They could use a lot of help with work flow and new equipment purchase and installation. Gave Sharon and Ron information on the test methodologies for echinacea, but need to have some cost estimates on the standards and a written description of what MF really wants done. Barbara is away until the beginning of August - will sit down with her then to detail out requirements. Hope to have this project under way by September 1996.

KAMLOOPS ROCK SHOP

Met with the Kamloops Rock Shop and had them sign a letter of intent. It took some time to get quotes in on the mechanical and electrical components, but now can put together a contract for the Rock Shop. They want to start as soon as possible, so we are looking at a start date of around mid August. The first phase will be design of both the mechanical and electronic components as well as some tests on the basic concepts. Phase 2 will be the actual development of a working prototype.

SCIENCE LAB

HPLC project is proceeding. It appeared that the scientists might consider buying an integrator, but the opportunity has passed them by for now. The student and JS are still working on the project and according to JS, they are now in the 'final' stages.

BARRETT MANUFACTURING

Ken Blawatt met with Larry Barrett to discuss a business plan and basic marketing strategy. Larry's original focus seems to have changed since I was in there talking to him...ATIC can't be of any help at this time.

B.C. LOTTERY CORPORATION

Met with Cari Beckett to discuss the development of a new roller system for their ticket reading machines. The rollers currently used needs to be replaced a couple of times a year and results in high technical cost and down time for the machines. We met to discuss solution ideas and final requirements. This is a student project for Henry Reiser and if successful, BCLC is interested in developing a machine to clean the rollers. They haven't expressed an interest in commercializing the idea themselves - they might had the rights over to ATIC.

ABEDA

Met with Dennis, Rick, Lyle and Brent K. at Abeda to discuss a list of projects they are interested in having us do. The first one is a rearrangement of their rough sawing and sorting line. They are seeing an increase in the number of 1" boards being supplied to them verses the 6" cants they currently receive; they would like to have the area designed in such a way that it will be capable of efficiently handling the 1" boards and all the other sizes of stock received. We will be starting this project around August 6, 1996.

WESTERN WOODLOT

Henry is doing a student project with Western Woodlot to measure the performance of a new saw tooth used in the milling industry. They are interested in having the new tooth tested out under different loads. Henry will be using a variable displacement probe to measure saw blade deflection.

INLAND GLASS

Met with Frank at Inland to discuss ways of speeding up the completion of the contract. He agreed to have John Cuzzola come and work in his office for the month of August and to pay him a bonus for the completion of the modules. John Cuzzola's current employer, New Tech, does not need his services during the month of August - this is a very fortunate happenstance. John Cuzzola has agreed to the new arrangement. We should have this project wrapped up by September.

VALLEY FIBREBATH

Met with Gary Shadlock to discuss the electrostatic chopper gun idea to reduce the amount of waste chop in their fibreglass operation. He is very interested in reducing the amount of waste and improving quality control. He mentioned that since their takeover by a Quebec company, they have been under pressure to improve their overall efficiency. They have had several consultants come in, but with little concrete success. We put a letter together for them outlining the

various services we could help them with - particularly the electrostatic chopper gun and industrial engineering. We should get back to them soon to get a project going.

DINOFLEX

Met with Brian McClintock, a consultant hired by Dinoflex, to discuss several projects. Dinoflex uses recycled tires and makes mats for playgrounds, athletics, standing areas, etc. The first project they would like to do is the separation of rocks/sand from the chopped up rubber. The sand dulls the knife in the slicing process and rock chips in their product reduces the 'quality' and increases the risk of injury to the user. We will be doing a dual proof-in-concept. The first one is an electrostatic method which will be done by Henry and his students; the second one is a tube-blowing/air knife method to be done by Lyle and Brent K. Both methods have a high probability of success and Dinoflex is interested in seeing both concepts tested out. They are not currently interested in commercializing the idea, but they haven't completely decided yet...we may get ownership transferred to us.

MOLYCOP

The Molycop project is a go. They will be managing it themselves and will be hiring ATIC to look after the electronic interface. We haven't decided yet who will do the work. I did up a contract for MOLYCOP to have with UCC.

ALTERNATE CROPS

Met with Al Oliver and Paul Webb to discuss the possibility of doing a study in the alternate crop industry potential in B.C. Al is in the process of putting together a proposal to get grant money from a new provincial/federal farm initiative. Paul mentioned a number of possible sources of financing. There is a tremendous amount of work that needs to be done in this area and we would like to handle the project - look at viability, types of crops and study the size of the market to determine niche markets. The need for a 'marketing co-op' to give the growers access to the world market was discussed. Need to get back to Al in a week or so to reaffirm our interest.

QUICKTURN PRODUCTION MACHINING

Visited Quickturn - the owner is an entrepreneur and inventor and interested in having his products in the marketplace but is unsure of marketing and market research requirements. I sent him information on MARTs and told him about the Business Incubator.

HABITAT FARMS

Met with Dennis Lapierre to discuss the possibility of developing/improving his machine for making woolen horse blankets. He is very reluctant to spend money on further development at this stage - is quite happy with the status quo (staying low key with his kids). I sent him information on MARTs and talked to his BDC advisor about the best way to spend his money - on patenting or market research.

CLIFF DEGOBEO

Called on Cliff to see how things were going. He is in the process of developing a couple of new products and going through the patenting process. He mentioned that he is available to do electronics subcontracting.

MISCELLANEOUS

Worked on the Marketing Strategy for ATIC, but have been busy getting contracts written and sub-contractors organized.

Received information from Progressive Solutions on their software programs for the wood industry. Am in the process of reading to see how we might be able to use the information.

PROJECT CONTRACTS
AS OF JULY 31, 1996

COMPANY	CURRENT PROJECT	FUTURE PROJECT
Kamloops Rock Shop	$5,000	$40,000
Abeda	$3,000	$15,000
BC Lottery Corporation	$900	$15,000
Dinoflex	$1,400	$15,000
Western Woodlot	$500	$25,000
Molycop	$23,000	
TOTAL	**$33,800**	**$110,000**

ATIC AUGUST REPORT

(AUGUST 1-31, 1996)

SUBMITTED BY: NOVA WOODBURY

MASTER FORMULAE

Helped Ron Smith track down some echinacea standards - the cost for the two main ones comes to $7,000 and is more than Master Formulae is willing to pay at this time. Discussed some options with them such as doing a simple comparative analysis with their major competition - this will not give them any concrete information but may be useful to them anyway. They will be meeting in-house to discuss the possibility of proceeding with a study.

KAMLOOPS ROCK SHOP

Contract for the design of the carving machine was signed along with the two subcontracts for the mechanical and electronic design components. A TAP grant application form was also filled out and looks like they will cover the project for an estimated $2,200, which is approximately 40% of the total design cost. We have had several meetings with the subcontractors and everything is proceeding on schedule.

SCIENCE LAB

HPLC project was partially finished by the student before course completion. A demonstration was given to the scientists but more work needs to be done in order for them to have a useable product. We will be meeting to discuss options on finishing off.

B.C. LOTTERY CORPORATION

The student proof in concept was carried out and the grinding of the rollers to remove contamination was successful. BCLC is now in the process of field testing some of the cleaned rollers to determine if they work. They have yet to sign the contract with UCC, but we are hoping to get together soon to clear up any questions they have. We will be sending them an invoice anyway and expect payment early in September.

ABEDA

A contract was done up and signed for the re-design of the Primary Breakdown area. The work has been completed and only the final report and presentation needs to be done. Lyle and Brent worked hard on coming up with a design which is both flexible and allows a large throughput of different wood dimensions. It will easily handle the increase in production from 12 million board feet to 20 million.

WESTERN WOODLOT

The student proof in concept done by Henry's students is complete. The students used a variable displacement probe to measure saw blade deflection to determine the performance of a new saw tooth used in the milling industry. They tested the new tooth tested out under different loads and discovered that a small increase in the size of the centre tooth performed better than the factory blade; but too much increase in size made the blade unstable. The results are not conclusive but a good starting point for further investigation.

INLAND GLASS

Three of the four models are virtually complete and only require odd size testing to be finished. The last model is just being started and John Cuzzola estimates that it will take about 3 weeks to complete. This extends beyond John's available time and we need to make sure he remains available to Inland to complete. Having John present at Inland has made the project proceed much more quickly than it would have had he remained working from home.

DINOFLEX

A contract was put together and two proof in concepts were carried out for Dinoflex to separate the rubber from rocks. The electrostatic method was not satisfactory since some of the rock particles contained mica which can carry a charge. The air knife method was also not satisfactory since it really only measured the flying ability of the rocks and rubber and there was not a lot of difference between the two. Lyle and Brent experimented with floatation in water and discovered that it worked really well. Dinoflex's initial reluctance to use water seems to have abated since they are looking at using warm water to heat up the rubber in the winter. We need to write up the final report on this project.

MOLYCOP

Held several meetings with Moly-Cop to discuss responsibilities of UCC/ATIC and brainstorm ideas on ball delivery methods and sensing techniques. A contract was drafted by us on behalf of Moly-Cop to cover our responsibilities. Keith MacIssac was contacted to do the electronics/programming and we will be doing up a sub-contract for him.

ALTERNATE CROPS

Spoke to Al Oliver and he is interested in having ATIC's involvement in the alternate crop project they are trying to get underway. He expects the proposal will be finished and delivered in early September and would like to get going towards the end of September.

BIGFOOT CAMPERS

Met with Jim Johnson to discuss their needs and how we may be able to help. This was an initial meeting and we need to get some feedback from them on where they see the largest money losing areas of their plant are. We will then see if there is any way we can help them out.

They are looking at setting up their own wood cabinet making shop since they buy a large amount and feel they can keep their own facility busy making them.

CREATIVE CONNECTORS

Met with Lyle Enns and to discuss their needs for a study to determine if they are capable of making a forecasted amount of product at a cost they can still make a profit. They have a draft agreement with a marketing company which forecasts a huge sales volume and they need some outside assistance in determining feasibility. We put together a proposal for them outlining how we can assist them.

PRECISION ARBOUR

Met with Garry Stroud to discuss working with him on his laser alignment system for the saw mill industry. He is also looking at developing a system for measuring blade performance and sending early warning signals when blades need to be sharpened or replaced. He is very interested in working with us and will be contacting us early in September to meet with his partners.

TOMCO

Brian Hayashi contacted us and wants Lyle and me to take a look at his shop again and talk to his employees about automation possibilities. He mentioned that he suffers too many ups and downs in production and also needs help with setting up a marketing and sales strategy. We will be meeting with him in September and Ken Blawatt will be talking to Brian about marketing and sales.

ATIC SEPTEMBER REPORT

(SEPTEMBER 1-30, 1996)

SUBMITTED BY: NOVA WOODBURY

MASTER FORMULAE

Master Formulae still hasn't decided what they want to do about testing their product. They are interested, but they don't have the time to make a decision. This prompted me to tell them about some of the other work we could do for them: production layout, scheduling, setting up machines for processing. Barbara was interested and I will be providing them with a quote detailing the advantages of having an evaluation done.

KAMLOOPS ROCK SHOP

The design phase of the project is complete. Both the electronic and mechanical components look like they will work. We have done a review of the design provided by the subcontractors indicating points of concern and should be hearing back from them shortly. There is the possibility that the next phase may be a proof-in-concept with the electronic portion since there is some question on its workability. I will, however, be putting together a quote for the total prototype development.

SCIENCE LAB

The integrator project has been put on hold until next year when it can continue on as a student project. The scientists needed a working integrator this fall for some of their contracts and it didn't look like JS would be able to deliver given the constraints on his time.

B.C. LOTTERY CORPORATION

BCLC is field testing some of the wheels ground during the student proof-in-concept. We have yet to hear how it is going. A signed contract was returned to us.

ABEDA

The final report and presentation of the re-design of the primary breakdown area was done. They wanted some time to review it with their staff to allow input and ownership. I called them back several times and they have not had an opportunity to all sit down together. I will continue to contact them and set up another meeting to discuss the potential of additional projects.

INLAND GLASS

John Cuzzola's work is virtually complete with only odd-ball testing required. Due to the time and material constraints currently being experienced and Inland, complete testing will have to be carried out at a later date. I will be contacting Frank Luciani to set up a meeting to discuss setting up an automated chop saw.

MOLYCOP

The contracts with Moly-Cop and Keith McIsaac were finalized. Not much happened this month due to the absence of Karol...the contract starting date is October 1, 1996. I will be getting together with Moly-Cop to discuss a schedule and milestones.

CREATIVE CONNECTORS

Made several calls to Lyle Enns to discuss the proposal submitted. Lyle is busy traveling around and has not had time to review...he had originally wanted the study done so he could go to the banker with the results...this may no longer be necessary.

PRECISION ARBOUR

I met with Gary Stroud several times to discuss his new arbour design. He is being pressured by Don Giles to have Forintek handle the project, but Garry is very interested in having ATIC manage the project. This should give us an opportunity to work with Forintek, NRC and UBC on a project.

TOMCO

Quoted Brian Hayashi on performing an automation evaluation. It is very important that he decides which market he is going to pursue (eastern or western) since it will make considerable difference to his process. He has received some assistance from Ken Blawatt, but Brian really needs someone to help him make decisions...Market Research would be a definite asset.

VALLEY FIBREBATH/MAAX

I met with Gary Shadlock and revisited the electrostatic chopper gun and the possibility of doing an industrial engineering evaluation of at least part of his plant. His fear of the electrostatic chopper gun seems to be abating and he presented our proposal to the MAAX people and got their curiosity up. We will have to do some research on the possibility of success to reduce their fear of failure...only a preliminary amount will be done before we come back to them with a proposal.

KOEHLER

I met with Aly Aly to discuss ATIC helping him with his assembly process and machine design. We talked about the electrostatic chopper gun and he, like Valley Fibrebath, would like some assurance it will work even before they spend money on a proof-in-concept. He brought up an interesting problem they have been working on for some time: the easy removal of the forms from the mold. I will get back to him on some ideas. He also mentioned that the person they hired to oversee production ideas, didn't work out...may be a potential there.

GARY ACKLES

Lyle and I met with Gary Ackles to discuss his underwater harvester. He is busy gathering subcontractors to handle different aspects of the construction and was interested in having us handle some of the electronics. We pointed out that we are also capable of doing project management...he plans on managing the project himself, but we may be able to handle some of the subcontractors working on the electronics.

SIMON SAYS RECOVERY

Peter and I met with Glenn and Harvey to discuss their idea of taking spruce slabs, considered to be waste by the mills, and trying to recover wood. Their initial tests indicated that 60% was recoverable and 80% of this was 2" stock. ATIC's role at this stage is as an information source - once they have a clearer idea where they are headed, we may be able to help them out.

MIKE'S WELDING

Paid a visit to Mike's Welding in Kamloops to take a look at what their capabilities are. They appear to be very good at fabricating, but don't get involved in much of the design. BCLC has given them a number of contracts, and by the look of their other contracts, they are well respected. They will be a good spot to go for fabrication work.

BELL POLE

Will be putting together a quote for Bell Pole to do the design of the cart and the rotation mechanism. Anthony-Seaman will be handling the drafting...we need to determine accountability and control. This will likely be a $12-15,000 project.

VERNON KILN AND MILLWORK

I met with Hank Dyck to discuss doing a BCWSG sponsored automation evaluation. The mill is undergoing a transformation at this stage and is looking at getting involved with laminating short pieces of wood together for export to the Korean furniture market. He is searching right now for industry partners and financial support. He has essentially worked out how he is going to redesign the plant and has had a 1.3 million dollar quote for further design and installation. Brent Kornelson provided part of the quote. We still may be able to find a part to play in this redesign.

ATIC OCTOBER REPORT

(OCTOBER 1-30, 1996)

SUBMITTED BY: NOVA WOODBURY

MASTER FORMULAE

Master Formulae has resurfaced with a request for analyzing echinacosides. They were approached by a company in Alberta and asked if they would be able to supply product with a guaranteed 4% echinacosides content. This would require the purchase of scientific standards...this all depends on whether or not the company in Alberta decides to go ahead with the purchase.

KAMLOOPS ROCK SHOP

Things are on hold at the Rock Shop. They have not received their insurance money yet and are not in a position to move ahead until it arrives. Jim will be selling his half of the business back to Dave and is planning on going ahead with the machine development on his own. We may or may not be involved in the next phase of the project...Jim is looking at taking over the project himself. Will be getting together with him to discuss.

B.C. LOTTERY CORPORATION

BCLC is field testing some of the wheels ground during the student proof-in-concept. I called to find out how it was going, but it is currently a low priority. Cari will get back to me in a few weeks to let me know.

ABEDA

Finally made contact with Abeda. We will be getting together with them in November to discuss the shop layout and the potential for additional projects.

INLAND GLASS

Inland glass contract was successfully completed. They are undergoing a slow down at this time due to government building cut backs so we have to put off the automated chop saw project until next year.

MOLYCOP

Have held regular meetings at Moly-Cop to discuss the progress on the project and next steps. Moly-Cop has built a prototype out of steel to test the ball pick up and delivery to the sensors - it works very well. Lyle has also discovered the possibility that the working model can be made out of steel and may not need to be UMHW. This will speed up the project considerably.

PRECISION ARBOUR

I met with Gary Stroud several times to discuss his new arbour design. He is being pressured by Don Giles to have Forintek handle the project. We could get in there for project management, but we would be better off playing a more central role in his on-line laser monitoring device. Gary is trying to get FRBC money to cover the cost of this project.

TOMCO

Did an automation evaluation at Tomco keeping in mind the fact that they don't have a lot of money to spend on equipment purchases. Our recommendations will likely cover basic shop and workstation layout, along with relatively simple jigs and fixtures to improve their productivity. They need to reduce the cost of making each home by 20% — the labour component only accounts for 20% of the overall cost as it is. So, recommendations will be geared to reducing the time required to make each home, which will lead to more homes being produced (potentially) and greater negotiating power for raw materials.

VALLEY FIBREBATH/MAAX

Spoke to Jeff Doyle - the only Chemical Engineer on staff at MAAX. He heard about our electrostatic chopper gun proposal and was curious about how it would work. Spoke to both Lyle and Henry about background information and there essentially isn't any. Will get back to Jeff next month to discuss further.

BELL POLE

Negotiated contract with Bell Pole for finishing off the cart design and pole rotation. This is an 18,000 contract with the potential for a second project where we will handle to building of the machine. This part needs to be negotiated and due to the other demands on Bell Pole's time, will be revisited in Jan 97.

Pro-CIR

Went to Pro-CIR to observe their operation. They make the composite mouldings around WesternStar emergency escape doors and sinks specialized for the hair dressing industry. They hand cut and drill the product after it comes out of the mould. This is a time consuming process and represents a bottleneck for their operation. They are looking to have some help in designing jigs to speed up this part of the process. We will be putting together a quote for the emergency escape door.

EXCO

Met with Rick Cunningham and Dennis from FERIC to discuss their idea of taking small pieces of wood, putting them through a debarker and then make chips. This would be a portable unit with would be used up at the cut sites. Need to talk to them again to discuss further.

ALTERNATE CROPS

Meeting held in Agassiz to discuss the direction Ag Cda and Ag BC should take. Not much resolved, but a good chance to meet people involved in research and discover who's doing what.

DAVE CHARCHUCK

Previous employee of the College - meat cutter - has come up with an idea to brand meat after it has been cut and just before wrapping. This is a marketing strategy for beef producers and has some interesting potential as a business. I had Viona do an initial patent search - she came up with some similar ideas and now need to read them in detail to determine usefulness. Modifications or a whole new design may be necessary.

PACIFIC BENTONITE

Met with John Dormer to discuss the project involving bentonite and waste from the saw mills. Paul put together a proposal for FRBC funding to do a feasibility study on the potential uses and usefulness of the product

WOOD IDENTIFICATION

Looking at putting together a study on techniques of identifying wood that would be useful in high speed, mill applications. First we need to determine where this identifyer would be most useful and why they need to use it. Once this is determined, we would then be able to move on developing a commercial application.

MEMORANDUM

Date:	September 17, 1996
To:	Dr. Paul Webb
From:	Lyle Killough
Re:	July Repon

Bell Pole
Automated Framing Machine

A meeting was held in North Vancouver at the offices of Anthony Seaman, Consulting Engineers. They were contracted by Bell Pole to perform an engineering review of ATIC's Framing Machine Design. Several minor questions and criticisms were raised, but they found the over-all design to be sound. Examination of the issues raised in this meeting will be addressed as a background task. Bell Pole is still indicating willingness to proceed with ATIC on this project.

Kamloops Rock Shop
Three Dimensional Duplicating Carver

Quotes were requested from DSM Automation and from Process Automation Technology for the development of the control system for the Carver. These quotes were discussed with the integrators and were independently reviewed. DSM Automation was selected.

Two meetings were held with Jim Lund to discuss design and project plans.

Abeda Wood Products

A visit to Abeda Wood Product's facility in Winfield was held on July 17. ATIC has been asked to look at several production issues in their operation. The first project will be to develop a design which would allow them to re-locate all of their saws in one building and to determine if a 20% increase in wood volume could be achieved. A proposal was developed and delivered to Abeda for this design.

Inland Glass and Aluminum
Skylight Software
This project continues to proceed at a very slow pace. A mechanism to drive the project at a faster pace is being developed. At present, one model of four has been completed.

Two meetings were held at the end of the month with Inland Glass to negotiate a means of finishing this project. There have been completion bonuses tied to acceptance testing and the provision of work space at Inland Glass for John Cuzzola agreed to. This project should be complete in a month.

Molycop Canada
Cracked Ball Detector

Molycop still intends to proceed with the completion phase of the Cracked Ball Detector. This project will not commence until August.

Low Cost Automation

Meetings were held with Richard Paweska and Dennis Oldridge to outline enough of this project to allow them to quote on the software development. Acceptable quotes were received and PSAs were written. There should be functioning software by the end of August.

Meetings were held periodically throughout the month, and the preliminary issues of where critical aspects of control of the system have been resolved.

FORINTEK
Molder Project

A meeting with Derek Williams was held on July 2 at FORINTEK's Vancouver office to discuss a collaborative project to develop molder set-up assisting hardware and software. Following this meeting, letters of intent were exchanged to establish our respective roles. Another meeting was held in Kamloops with Ron Neilson to further these discussions.

Derek Williams developed a list of potential contacts. This list was refined by ATIC. These companies will be approached following Derek Williams holidays in August.

Valley Fibrebath Ltd.

A site visit was held at Valley Fibrebath. There are several opportunities for automation and industrial engineering in this operation.

Quickturn Machining

A visit was made to Quickturn in Vernon. It is not anticipated that a project will arise from this company, however we may be able to use them as a manufacturing resource.

Thompson Guitars

Another visit was made to Thompson Guitars in Vernon. They are still interested in developing machinery but they will not spend any money. No further action is recommended with this company.

Silva West Resources Ltd.

Some design ideas for an automatic pole notcher and a brief report were prepared for Silva West Resources. The cost of this work was billed to NTC funds. Silva West closed their operations at the end of July due to wood supply problems.

Creative Connectors

A brief survey of paint spraying technology options was conducted for Creative Connectors. They have moved their operation into some leased commercial space and are presently pursuing some large volume contracts. They are interested in involving ATIC in designing increased production equipment.

BC Lottery Corporation

Two meetings were held to discuss the development of a foam drive roller resurfacing system for BC Lotteries. This project will proceed as a student proof in concept study for the CAST Program.

Dinoflex Manufacturing Ltd.

Dinoflex requires a system which will remove stone chips from the ground rubber tires they use to manufacture flooring. Several methods were proposed. ATIC will perform a proof in concept of a pneumatic cleaning system and an electrostatic method will be tested as a CAST student proof in concept.

Larry Barrett

A meeting was held with Larry Barrett to discuss his proposed re-designed turning center. He needs a CNC lathe, but he does not have any contracts lined up for it.

Ken Blawatt will provide some marketing assistance. If this produces positive results, ATIC can become involved with machine design.

Tom Witte

Tom Witte has developed an automatic battery disconnect for cars involved in accidents. He needs to assess the market, and his ability to access that market. He was refered to the Canadian industrial Innovation Centre at Waterloo.

MEMORANDUM

Date:	July 15, 1996
To:	Dr. Paul Webb
From:	Lyle Killough
Re:	June Report

Overview

Several projects are developing: Bell Pole is still deciding, but it is unlikely that the full project could proceed at this late date in the year. Molycop will proceed with the implementation phase of the Cracked Ball Detector, and the Kamloops Rock Shop is still interested in proceeding with the carving machine. Three days were spent visiting businesses in Williams Lake. I was on vacation for the first week of the month and on June 27 and 28.

Bell Pole
Automated Framing Machine

There was little progress on this project in June. Some design notes were compiled and sent to Bell Pole. This was in response to their concerns over details on some of the machine design. Time was spent in preparation for the up-coming design review meeting with Anthony Seaman Consulting Engineers in July.

Kamloops Rock Shop
Three Dimensional Duplicating Carver

Progress on the Rock Shop project was disrupted by their business burning. They have expressed interest in continuing with the project. A minor amount of design time was spent on this project in July.

Abeda Wood Products
Automation Evaluation

Rick Horte, President of Abeda phoned to thank us for the Automation Evaluation Report that Brent Kornelson and I produced in May. We were also asked to return to Abeda to provide input on some new equipment that they will install this fall. This meeting will take place in July.

Abeda has some questions regarding the use of a new band saw blade that they are using. I have contacted the band saw specialist, John Taylor, at Forintek. There may be some opportunity to generate a research project on Abeda's band saw.

Inland Glass and Aluminum
Skylight Software

Regular meetings were held with the programmer working on this project. Progress continues on this project. It is expected that the second model will be operational by the end of July.

Sonax Furniture Manufacturing Ltd.
Structurlam
Kodiak Research

Calls to these companies to follow up the preliminary proposals were made. Unfortunately, the messages have not been returned.

Molycop Canada
Cracked Ball Detector

Molycop has decided to proceed with the automatic cracked ball detector. ATIC will be responsible for implementing the electronics and controls while Molycop will develop the mechanical system. This project will proceed in August.

Low Cost Automation

Meetings were held with Raj Atwal, Dennis Oldridge and Richard Paweska. Richard will be contracted to provide the interface and control parts of the program while Dennis will provide the routines for exporting data from AutoCAD. Personal Services Agreements will be drafted once quote have been submitted.

Molder Project

Discussions have been held with Derek Williams at Forintek regarding collaborating on a molder set-up assistance and tool management system. This system will comprise of instrumentation and data acquisition and interpretation software. ATIC will develop the software and Forintek will implement the

instrumentation. A meeting will with Derek Williams will take place in July to further define the project.

HPLC Data Acquisition System

This project will be implemented by one of JS Bourget's Computer Technician students. I attended a meeting with Ron Smith, Sharon Brewer, JS Bourget and the student to discuss the approach to be used.

MEMORANDUM

Date:	June 17, 1996
To:	Dr. Paul Webb
From:	Lyle Killough
Re:	May Report

Overview

While no new projects were generated in May, several potential projects were seen. There continues to be progress on the software for Inland Glass and Aluminum. I was on vacation for the last week of May.

Bell Pole
Automated Framing Machine

A meeting was held with Bell Pole personnel to assess their company's current position on the Framing Machine project. They are still proceeding, but wish to have the machine design reviewed by an independent third party. They have contracted Anthony Seamans Consulting Engineering of North Vancouver to conduct the design review.

Kamloops Rock Shop
Three Dimensional Duplicating Carver

The Rock Shop was unsuccessful in finding a commercially available duplicating carver. They have discussed the machine design with Toolmaker Knut Lie. There is still a need for some electronic control of this machine, so ATIC is still involved. A meeting was held involving Knut Lie, Henry Reiser and ATIC to discuss design ideas. This project can be done using Henry Reiser's Computer Automation Systems Technician students.

Abeda Wood Products
Automation Evaluation

The report for the Automation Evaluation of Abeda Wood Product's facility was written and the invoice was sent.

Inland Glass and Aluminum
Skylight Software

Regular weekly meetings were held with the programmer working on this project. A number of versions of the first skylight model are being fabricated to test the dimensions generated by the program. Once this model is error-free, it is not anticipated that the other models will take long to complete.

Tomco Wood Products Ltd.
Site Visit

Peter Bellos and I attended a meeting at Tomco Wood Products on May 10. The investors involved in funding a new modular home building venture for the Japanese market scheduled to attend did not show up. We discussed approaches to increasing Tomco's production capabilities.

Sonax Furniture Manufacturing Ltd.
Site Visit

On May 16, Peter Bellos and I visited Sonax Furniture in Oliver. We toured their facility and discussed their production problems. There is an opportunity to develop some dedicated automation for some of their high-volume parts. Presently their set-up time for their drilling machines is as much as 30% of a shift. A conceptual approach to machine design for their plant was undertaken.

Nova Woodbury wrote and sent a preliminary proposal to Sonax.

Structurelam
Site Visit

On May 17, Peter Bellos and I visited Structurelam in Penticton. Structurelam custom manufactures laminated beams and laminated post and beam house frames for Japan.

There is little that can feasibly be done to assist the custom beam production, but similar technology to that developed for Bell Pole could be implemented for the post and beam manufacturing for drilling and routing for the connector hardware. There is also a potential for automating the "E Testing" that each piece of wood used in a laminated beam must undergo. Nova Woodbury has written a proposal to Structurelam.

Miscellaneous

A letter to Lynda Wilson, Dean of the Williams Lake campus was drafted. This was given to Nova Woodbury for completion.

A letter to Derek Williams at Forintek on collaboration with a molder set up and management software package was written.

Discussions were held with Protronix, an electronics company in Falkland, were held. Assistance with locating a small 3d router for printed circuit prototyping was given.

MEMORANDUM

Date:	June 13, 1996
To:	Dr. Paul Webb
From:	Lyle Killough
Re:	April Report

Overview

April was a very busy month with more than 10 off-campus meetings. In addition, proposals totaling over $300,000 were written on 6 projects. The Bell Pole project is now awaiting a decision from them and ATIC performed its second Automation Evaluation. I visited 2 companies in Penticton accompanied by Jan Langton, the ITA from the Summerland Research Station. This was an effort to involve some of the regional ITAs more closely with ATIC.

ATIC operated without a Project Manager during April.

Bell Pole
Automated Framing Machine

Final drawings and a quotation for machine construction were submitted to Bell Pole on April 2. This information was presented to the company management at meetings in April. A decision from Bell Pole is pending.

Low Cost Automation
Motion Control

An application to hire a student programmer was submitted. This application was rejected.

Western Industrial Clay Products
Site Visit

A meeting with Western Industrial Clay Products was held on April 10 to discuss ATIC assembling and managing an engineering team for the re-building of much of their plant. A letter outlining our potential involvement was written and delivered. We had limited success in finding the appropriate technology integrators for this project. In addition to

the shortage of expertise, the scope and high risk of failure of this project resulted in our withdrawal from it.

Camco Cutting Tools Ltd.

Camco requested a quotation for design and construction of a silver soldering "tinning" machine which was discussed during our site visit in March. This quotation was written and delivered. Camco is pursuing grant funding for this project.

Kamloops Rock Shop
Three Dimensional Duplicating Carver

A letter was written and delivered to Kamloops Rock Shop to follow the meeting and discussions of last month for the development of a duplicating 3d carver. Advice was given on how to search for the equipment they need and who to contact locally for assistance.

Abeda Wood Products
Automation Evaluation

Brent Kornelson and I spent April 19 at Abeda examining their solid wood tongue and groove paneling plant. Following this examination, we wrote a 5 page report with our recommendations and comments. This evaluation was carried out under the BC Wood Specialties Automation Evaluation Program.

Unit Electrical Engineering
Positioning Systems

Unit Electrical Engineering was interested in developing a GPS for positioning large equipment in open pit mines. Several meetings were held with the UCC student who would be involved in the project, and a visit to UEE's office in Penticton was made on April 9. Jan Langton of the Summerland Research Station accompanied me on this visit.

Research into GPS and alternative technology was performed and a preliminary proposal was written and delivered. In follow-up discussions with UEE, it became apparent that this project would not proceed this year due to their involvement in a large new project.

Inland Glass and Aluminum
Skylight Software

I became very involved in the IGA software project in April. There were several serious errors in the way the skylight's frame members are calculated. Several meetings were held wit' personnel at IGA and with the programmer. These meetings resulted in many advances in the program, but many problems remain.

Applied Science Technologists and Technicians of BC
Promotional Letter

Following conversations with John Leech, Director of ASTTBC, a letter which describes ATIC was written for potential inclusion in the next association newsletter. If this letter is published, it would introduce ATIC to many of the users and suppliers of technology in BC.

Kodiak Research
Site Visit

Kodiak Research manufactures Ultralight Aircraft in BC and Alberta. ATIC visited their facility in Vernon on April 23. While we had gone to investigate the possibility of automating a router table for them, we also discussed the designing an automated drilling machine for producing aircraft parts. A design meeting was subsequently held with Brent Kornelson and a preliminary proposal was produced. We did not propose a motion control system for the router table due to unobtainable performance expectations on their part. Kodiak is still interested in pursuing the drilling machine, but not until several of their current projects are complete.

Thompson Guitar
Site Visit

ATIC visited Ed Thompson's guitar manufacturing facility in Vernon. The demand for their instruments exceeds their ability to produce them so they are interested in automating the neck production. Various ideas were discussed, but no further action will be taken until there is strong indication of a willingness and ability to fund development of equipment.

Penticton Countertops
Site Visit

While in Penticton, Jan Langton introduced me to Penticton Countertops. They produce one-piece cast plastic countertops and need a better molding jig system. A preliminary proposal for designing a casting jig system which could be fabricated by their company was written and delivered.