

Large Sheet Process Consolidation Project

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EXECUTIVE SUMMARY

The purpose of this project is to reduce labor costs through the consolidation of large sheet processes into the Beta and Alpha manufacturing plants. The consolidation of equipment and departments will allow for the reduction of indirect labor personnel who are duplicated between the plants. Costs will also be reduced through increased efficiencies and make-ready reductions.

The relocation of A, B, C, and D to the Alpha plant will create a more effective manufacturing division. B equipment from Alpha would move to the Beta plant to create a production center of excellence. The consolidation will allow each plant to focus on the processes in which they excel. This realignment of resources will reduce overall manufacturing costs to help manufacturing remain globally competitive. XYZ will also be able to deliver products to the marketplace faster, cheaper, and higher quality utilizing its current plants and assets.

Using the XYZ financial model for the most likely situation shows that with an investment of \$776,800, the net present value (NPV) will be \$2,386,170 and have a payback of 2.0 yrs. The after tax rate of return will be 67.8% with a weighted return on assets managed of 1035.1%.

The recommendation is for the approval of this appropriation for the amount of \$776,800. This will allow for the relocation of 14 presses between the Beta, Alpha, and Gamma plants, as well as, any other necessary moves to support this proposal.

INTRODUCTION

This field project contains a project plan for the management of the consolidation of large sheet processes into the Alpha and Beta production facilities of XYZ, Inc. This will be the roadmap to be followed by the project team for the purposes of implementing this project.

XYZ, Inc. is a multinational corporation in the business of producing products for the social expression industry. XYZ has U.S. based manufacturing of product in Beta, Gamma, and Alpha, KS. Currently about 40% of products are produced in Beta, 40% in Alpha, and 20% in Gamma.

Specifically in Alpha, about 80% of what moves through the plant is related to everyday product sales. The other 20% is comprised of the boxed product offering. The historical trend for boxed product production has been steadily declining for the past decade. The department once consumed over $\frac{1}{4}$ of the floor space in the plant. Now the department has vacated several areas and is approximately $\frac{1}{6}$ of the total floor space.

The corporate strategy is to keep XYZ's cost position as a competitive advantage over others in the social expression industry. In 2003, the Delta manufacturing plant moved all of their equipment to Beta and Gamma to better utilize the valuable Crown Center building space. This was done to lower the overhead for manufacturing and increase office lease revenue. This move reduced the available space in Beta to a minimum. However, all of the available space in Alpha creates an opportunity for the facility to offer up a bold proposal. The proposal is to move most large sheet processes to Alpha in support of the corporate strategy.

Alpha has long been a leader among the three plants in productivity on large sheet processes. It is attributed to their stable workforce, management, and skill at continuous improvement. Alpha

has the available space required to make this happen and the people necessary to make it a success. The total savings that can be achieved on an annual basis are estimated to be over \$1.4M. This would be obtained through the retirement of older less productive presses, a reduction in support staff across the three plants, and a productivity increase from continuous improvement and a skilled workforce.

The project will require a large investment to relocate the equipment and machinery to Alpha. The project would entail relocating departments currently within the plant, as well as, moving 14 large presses. If approved this project could stabilize some of the seasonality that Alpha currently experiences with boxed products. The project will also be a win-win for the other plants as well, by freeing up space for their expansion needs.

LITERATURE REVIEW

Project management is the activity of planning, executing, and delivering successful results on a project. This review discusses the literature surrounding project management and its implementation. It will discuss project structures, project control, and successful project management. The works cited have been taken from books, journals, and websites about the body of knowledge of project management.

Project Management Definition. “A project is a unique, finite undertaking with clearly-defined objectives, involving many inter-related tasks or activities and the contribution of a number of people working co-operatively under centralized control to produce a specified outcome or product within clearly-defined parameters of time, cost, and quality” (Gray, 2005).

This is one definition of project management that captures the essence of what project management is all about. Project management is also about the project manager. This person is the leader of all aspects of project execution. The project manager uses the tools of project management to ensure that the project is successful.

Project management can also be defined by a hierarchal breakdown of finite steps that must be carried out for the project to be implemented successfully. This is commonly referred to as the work breakdown structure (WBS). “The WBS organizes and defines the total scope of the project. The WBS subdivides the project work into smaller, more manageable pieces of work, with each descending level of the WBS representing an increasingly detailed definition of the project work” (PMBOK, 2004). The lowest levels of tasks are called work packages. These work packages can be scheduled, monitored, and controlled by the project manager.

Project Management. Project management has been a discipline since the late 1960’s. Project management societies in the US and Europe were critical to the adoption of project management disciplines. Project management fit well with the framework of business, government and the military. The popularity of the discipline is now deeply rooted within these organizations. However, project management is still viewed by most as a set of planning controls and techniques, rather than true management.

Project Organization. There are three main types of project organization that are derived mainly from the organizations that initiate the projects. There is a client focused organization, where the project is integrated into the organizational structure that already exists. Another is the matrix organization, where the project manager pulls resources from the existing functional

departments of the organization (Baguley, 1995). In the project focused organization, the project team exists as a self-contained group with its own resources.

It is widely accepted that the use of project teams increases the level of commitment of the team members, especially when dealing with projects that are leading change within an organization. There is debate on which type of team structure produces the best results. One researcher found that in studying the success of 546 projects that projects relying on the functional organization were less successful than those which used a balanced matrix, project matrix, or project team (Cleland, 2002). The project matrix showed evidence that it could be the best model for project management.

Project Goals and Objectives. The objectives of any project require meeting three constraints, cost, time, and quality. This is referred to as the triple constraint. A project cannot be considered successful without the meeting of all three of these constraints. The triple constraint is often represented by a triangle with one of the constraints at each corner, see Figure 1 below.

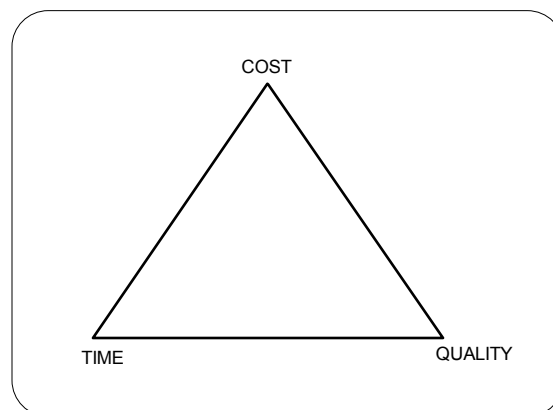


Figure 1 (Gray, 2005)

Some researchers argue that the people involved in the project should be considered as a part of the triangle. They influence the completion of each of the constraints and the overall success of

the project. However, in its simplest form this is a representative example of the ultimate goal of a project. If one of the legs of the triangle does not meet the goal it will invariably affect one of the other constraints.

Project Management Factors for Success and Failure. There has been much research performed in the area of analyzing why projects succeed or fail. The simple answer for success or failure is that all projects have some risk (Lockyer, 2005). This uncertainty involved in projects is the usual place of blame by team members and project manager for project failure. If the project is a success the project team considers the uncertainties to have been non-factors in the completion of the project.

David Cleland writes that a project can be successful in meeting the constraints, however not satisfy the customer's needs. He defines a successful project as, meeting the triple constraint and integrating the objectives into the customer's organization to contribute to the customer's mission. This is truly at the root of all projects, connection to the mission or vision of an organization to ensure that the project is contributing to the organizations goals.

There are common success factors found in many of the writings. As usual not all authors agree on the order of factors but all contain the same common items.

- Upper management support
- Customer involvement
- Experienced project manager
- Clearly defined goals
- Defined scope

- Standardized procedures
- Technical expertise
- Great communication
- Careful team selection
- Problem solving

Data collected over a three-year period from over 400 project leaders lead to the following list of failure causes (Meredith and Mantel 1999).

- Insufficient upper management support
- Customer and management changes
- Technical complexities
- Staffing problems
- Unrealistic project plans
- Trouble detecting problems early
- Poor front-end planning
- Underestimated project scope
- Weak project leadership
- Communication issues

These failure causes are echoed by many different authors. The lists may vary slightly but all have the same undertones. All agree that upper management support is critical for any project leading change.

The Project Manager. The project manager is responsible for all aspects of project success. They manage and direct the project resources to achieve objectives. Project managers develop the project plan and ensure that the work is done on-time, within budget, and to specifications. Finally, they interact with upper management with regards to progress and issues, and managers and staff to gain buy-in for project success (Leintz and Rea, 2001). The project manager needs to be talented in resource management and people management to be successful.

Project managers often face many challenges such as, not having direct authority over the individuals with whom they are directing. They need to utilize different types of power and techniques to achieve results. Experts disagree on the most important power or technique to accomplishing projects. Persuasion and coercion are techniques available to a project manager. Utilizing expert power in a specialized area gives the project manager authority. There is no best way to utilize power or gain authority due to the wide variety of projects, people, and situations that arise in project management. Project managers, at the very least, need to be adaptable and ready for change to be successful.

“Resolving conflicts is the single most important characteristic of the project environment” (Kerzner, 2003). Conflicts and the ability of the project manager to deal with conflicts will determine the success of the project. Problems with the schedule or resources are potential causes of conflicts. Often time, conflicts with functional departments over human resources are the most severe. Department managers find it difficult to share resources if the goals or direction of the project are not mutually beneficial. Managing conflicts is an important skill for project managers regardless of the size of the project.

The following list of skills, are good tools for a project manager to possess.

- Leadership
- Motivating individuals and groups
- Developing teams
- Managing conflict
- Establishing power
- Organization
- Administrative
- Technical Expertise

(Kerzner, 2003; Harrison, Lock, 2004)

Summary. Managing projects is a difficult task. The project manager is required to be a very multitasking individual. They must possess management, technical, sales, and administrative skills. Often they have limited budgets and resources but have to pull together those resources to deliver a project that meets the cost, quality, and timeframe of the customer. Mastery of these skills does not guarantee project success, but it does increase the probability of project success.

PROJECT LIFE CYCLE AND ORGANIZATION

This section contains information regarding the project life cycle, project stakeholders, and the organizational structure. Each of these categories will influence how the project is managed and implemented. The following discussion will detail the interaction of these vital project considerations.

Project Life Cycle. Projects typically are derived from plant initiatives. Sometimes the corporate organization will determine the project needs, but this project has been developed within the Alpha organization. The project will be handled internally, utilizing existing people

and resources. A steering committee will be established to monitor and review the progress of the project and to serve as the champions for the project. The project and all project processes will be managed by the project manager.

The length of the project will span approximately one year. As with many projects that involve moves they happen in waves, not all at once, due to time and resource constraints. The necessary preparations that must be made within the plant and the balancing of workloads to ensure that production is not interrupted will lengthen this project.

Project Stakeholders. There are significant project stakeholders that will be influenced by this project. All of manufacturing will be impacted in some way. Each of the plants involved will be impacted positively and negatively, however, ultimately the impact will be a net positive for XYZ, Inc.

The major benefit of the project is the realignment of resources within the three manufacturing plants to more effectively utilize them. Relocating the large sheet processes to the Alpha plant will facilitate large efficiency gains with respect to production rates, reduced overhead and increased asset utilization. Gamma will gain valuable space for relocating presses from an adjacent facility. They will also be giving up a low volume large press operation that is not as efficient as comparable operations. Beta was affected greatly by the closing of the Delta plant and is in desperate need of additional floor space. Beta has excelled at secondary processes and developed a niche for them. The removal of their large sheet processes and relocation to Alpha will allow them to focus on the secondary processes. This project will align the strengths of each plant to support the most effective utilization of equipment and capital for the production of products.

Organizational Influences. This project has been developed by the Alpha plant. Alpha realizes that they have a competitive advantage over other production facilities in large sheet processes. Alpha developed this proposal to help stabilize and bolster their position within the manufacturing branch of XYZ. Alpha understands that maintaining cost competitive is crucial for keeping the doors open for many years to come.

Alpha knows that even though the benefits are great to all of the plants, they are probably receiving the greatest benefit. For this initiative to gain momentum it is critical to have support from the very top. Without the necessary champions in senior management the project will never happen. Senior management's support is critical for the benefit of all manufacturing not just the individual plants.

Each of the plants, in their own right, operates as a separate manufacturing entity. They compete against one another for work and resources for similar processes. This competitive culture makes it very difficult for any plant to give up a portion of their current work. Also, since each of the plants are trying to preserve jobs it is counter intuitive for them to relinquish work.

Alpha is faced with some unique challenges. The entire boxed product line is packaged and produced there. The volumes of this business were at times 25% of the entire production within the plant. This number has been reduced to about 5%. Alpha has been able to stave off bids from the orient to steal the work, but as volumes continue to decrease it becomes increasingly harder to remain cost competitive. In the event that this volume is lost, Alpha will be in a difficult HR situation. The workers from this department could not be absorbed into the daily workings of the plant. Alpha is trying to stabilize its workload to help hedge against the loss of

the boxed product lines. The implementation of this plan will allow Alpha to absorb this excess labor and avoid some of the HR issues.

The project is being driven by the Alpha management team. The management team consists of the Plant Manager, Production Manager, Engineering Manager, and the Production Services Manager. This team is looking out into the future to proactively address potential issues. The team has identified the threat of losing the boxed product business as a major issue for the Alpha plant. The team has focused on the strengths of the plant to develop a contingency plan that can result in a positive outcome.

No plan is ever without flaws. The immediate impact on the Alpha facility would cause a lot of position turnover within departments. The addition of higher pay grade jobs would stimulate much movement at first. Also, there would need to be a massive training effort put forth by the plant to get the operators up to speed. The movement would cause a dip in efficiencies, however, between 6 months to 1 year Alpha should see the overall performance level improve.

Other considerations with a move of this nature would have to be whether or not to allow operators from the other plants the opportunity to move to Alpha. This would be a decision that would be tackled at the corporate level. When the Delta plant was shut down they offered early retirements and the opportunity for operators to move to other facilities. This is definitely a critical issue that would need to be addressed with the consideration of this project.

The true power struggle will lie within the management teams of each of the plants. The Alpha team will utilize their cost and labor position to substantiate their case for the project. Beta will resist the project due to the nature of the move being considered. Beta will be the most adversely

affected by the project, Gamma will not notice much, if any impact within their plant.

Potentially the HR aspects of the project will prove to be an insurmountable obstacle regardless of the cost benefits.

Organization Structure and Company Culture. XYZ is built on a foundation of beliefs and values that can be seen throughout the entire organization. These beliefs guide XYZ when making business decisions. The management at XYZ believes in this culture and it is well represented in all branches of the organization. However, even though the core values and corporate culture is the same among all divisions the management style throughout each of them can vary greatly.

XYZ began from humble beginnings in 1900, as K. XYZ came to Delta to sell imported products. In 1916, after his brothers had joined him they purchased a company and began producing products under the name XYZ Company. During the 1930's the XYZ brothers began putting "An XYZ Product" on their products, and XYZ Inc. was the result of this. From these small beginnings XYZ has grown into an international corporation with many subsidiaries and sales of greater than X.X billion per year.

K. XYZ said in his autobiography, "If a man goes into business with only the idea of making a lot of money, chances are he won't. But if he puts service and quality first, the money will take care of itself. Producing a first-class product that meets a real need is a much stronger motivation for success than getting rich." K. XYZ practiced what he preached by demanding the highest quality products and the highest quality results from his organization. K. XYZ's personal beliefs and philosophies are reflected in the company's core beliefs and values statement:

THIS IS XYZ

We Believe

That our *products and services* must enrich people's lives and enhance their abilities.

That *creativity and quality* – in our concepts, products, and services – are essential to our success.

That the *people* of XYZ are our company's most valuable resource.

That distinguished *financial performance* is a must, not as an end in itself, but as a means to accomplish our broader mission.

That our *public ownership* must be preserved.

The values that guide us are:

Excellence in all we do.

Ethical and moral conduct at all times and in all of our relationships.

Innovation in all areas of our business as a means of attaining and sustaining leadership.

Corporate social responsibility to Delta and to each community in which we operate.

Having an understanding of the history of the corporate culture at XYZ will allow us to understand the driving factors that influence the corporate culture today.

XYZ has always been a company that has valued employees as an important resource. XYZ is a privately held organization owned approximately $\frac{3}{4}$ by the XYZ family and $\frac{1}{4}$ by the employees. K. XYZ set up this employee ownership plan so that the employees would take ownership of the company and benefit from its success. Preserving the company's private ownership remains a priority today for the XYZ family and the employees.

With regards to management style XYZ has been set up very much like most traditional organizations. The Board of Directors monitors policy and the overall status of the company. The CEO has always been a XYZ, with the exception of ABC who retired in 2003. The

President of XYZ works with the North American Management Team (NAMT). This team is where each branch of the organization is formed (see Figure 2).

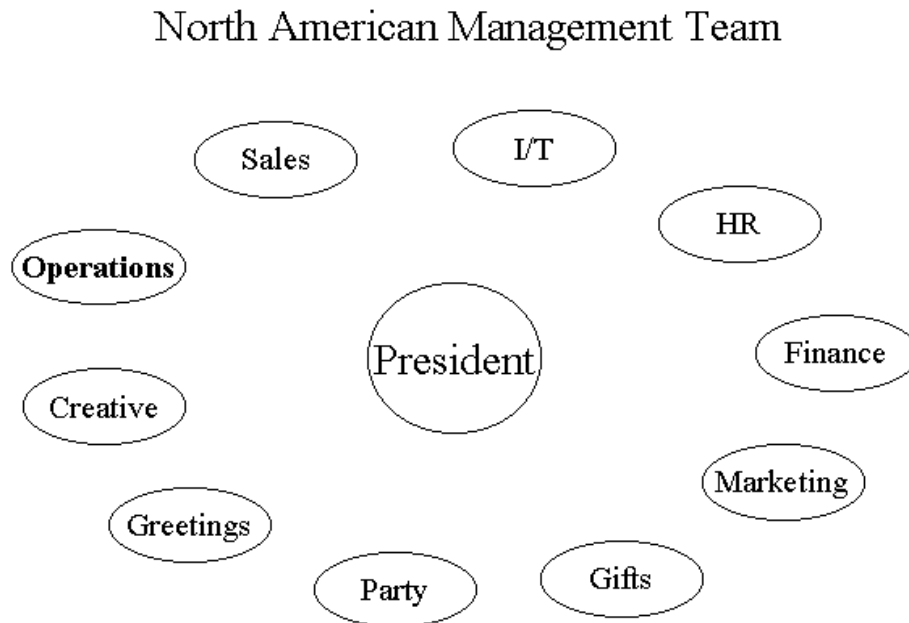


Figure 2

Each of the Vice Presidents, for the different divisions of XYZ, has their own management style. Each of the individuals within the chain of command has a different management style that has been shaped by their experiences and values. However, these individuals have aligned themselves with the core values that XYZ embodies.

PROJECT MANAGEMENT PROCESS

Project Charter. This project is being proposed to help maintain a globally competitive solution to maintain the production of products in the United States. The project will involve the relocation of 14 large presses from the Beta, Alpha, and Gamma plants to the Alpha and Beta plants. The benefits of this project will be reduced costs, better serviceability and higher quality.

Consolidation of this large sheet work will create a center of excellence within XYZ that can meet and exceed the needs of XYZ business units. This project will be managed by the Alpha plant and will report to a steering committee comprised of senior plant management.

Project Scope. The successful completion of the project will involve meeting cost, time, and business goals. This project is expected to generate \$1.4 MM of savings annually to XYZ, Inc. These savings will come from increased efficiencies, reduced indirect staff, and lower spoilage rates.

This project will set the direction for the entire consolidation project within the Alpha facility. The plan does not include the provisions for handling the relocation of equipment to the Beta facility or the consolidation of other equipment into the other facilities.

The deliverables from the project will be the detailed project plan, floor layouts, business case, and management presentation. The project plan will include the timeline, milestones, budget, and personnel requirements for completing the project. The business case will discuss the feasibility of the project and the expected return on investment. The plan will also include preliminary layouts of the plant with the added equipment. Finally, the management presentation will be used to present the concept to senior management.

The project will consist of moving 14 presses over a nine month period. Each of the presses will take about 2 weeks to disassemble, move, and reassemble by Alpha's maintenance technicians and rigging company. The equipment will be disassembled by Alpha technicians in conjunction with the other maintenance staff at the other locations. This will ease the reassembly of the presses when they arrive in Alpha. Due to the nature of moving large presses they will be

brought into the plant in phases so that personnel resources will not be constrained, due to the fact that the plant will still be fully functioning.

The current plant layout will need to be revised to make room for the new equipment. Some smaller departments will need to be relocated to the 2nd floor to allow the large equipment to remain on grade. This will reduce the installation costs of the equipment and keep the equipment from being spread out all over the plant.

The assumptions necessary for the successful completion of the project are many. The largest assumption is that the boxed card business will be going away and creating a need to fill jobs within the Alpha plant. Another assumption is that the other plants will be agreeable to the notion of moving equipment for the greater good of the corporation. The Gamma facility will be able to close one facility and move those operations into a single facility. The current temporary hires will be filled with the excess full time employees in each of the plants.

The risks associated with the project are capacity constraints, labor issues, project schedule, projected savings, and cost estimates. The corporate capacity will be affected by the movement of the equipment between the plants and the necessary ramp up period as new operators are trained. The key will be to watch the forecasts and avoid the peak periods as the project progresses. The labor issues are numerous, involving relocation, excess high pay-grade personnel in a given location, untrained labor resources in Alpha, and an aging workforce. The project schedule can easily be affected by seasonal volumes and unexpected delays. The projected savings will only be valid if Alpha can achieve the anticipated results in quality, efficiency, and headcount reduction. Each of these items and unexpected happenings can all drive up the cost of the project.

With the project being controlled through the Alpha organization it is necessary to discuss the team structure and decision making process. The project will be lead by a team leader with 5 other members. There will be representatives from engineering, production, and maintenance. The team will manage the changes and project status reporting to the Alpha management. Before implementing any changes to the plan the team will be responsible for obtaining permission from the leadership team.

Work Breakdown Structure.

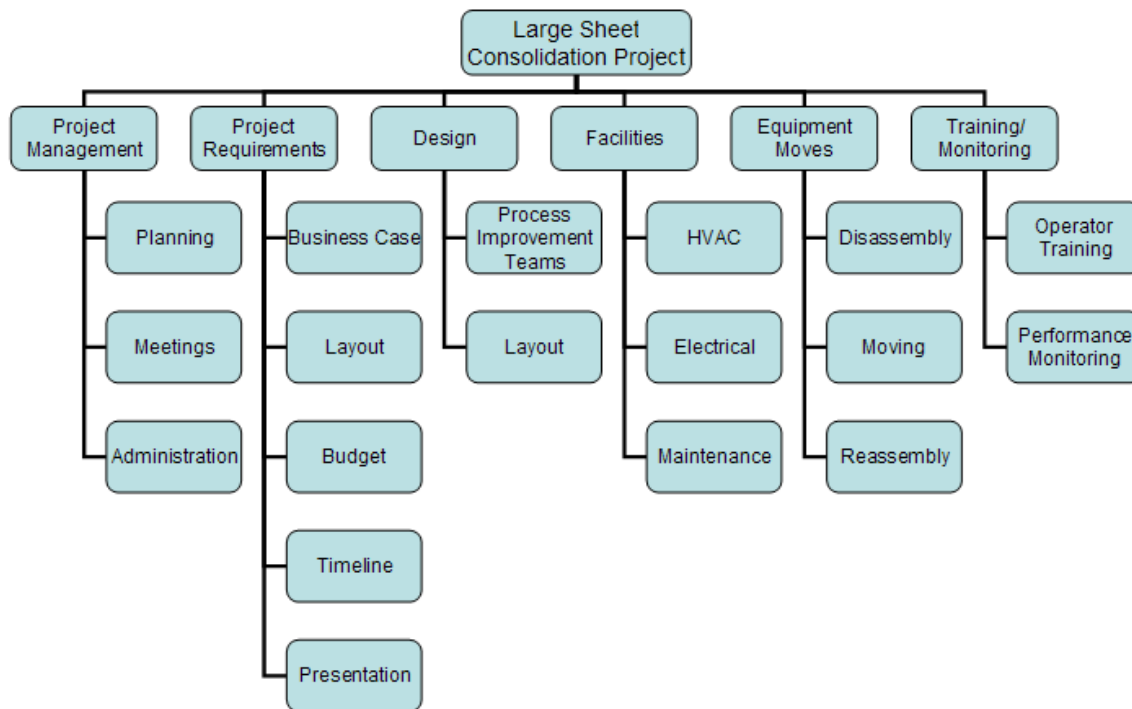


Figure 2

Activity Sequencing.

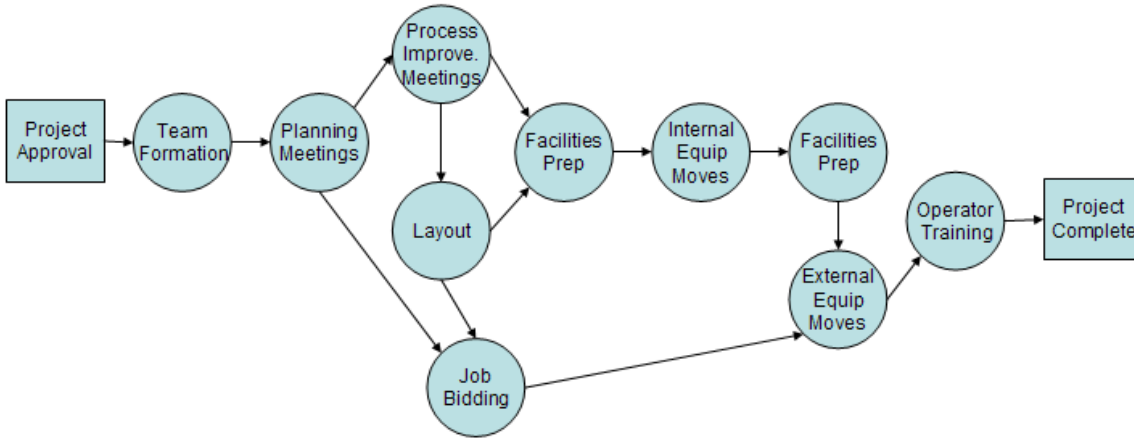


Figure 3

Activity Duration Estimates. The project should be completed within nine months from the project start. The following schedule outlines each phase and major task of the project with the corresponding duration. As the Gantt chart shows, some of the major tasks overlap due to ability to start one before another is finished.

Project Schedule

Project Approval	0 Days
Team Formation	2 Weeks
Planning Meetings	3 Weeks
Process Improvement Meetings	3 Weeks
Job Bidding	2 Weeks
Layout Planning	4 Weeks
Facilities Preparation	6 Weeks
Internal Equipment Moves	8 Weeks
Facilities Preparation	8 Weeks
External Equipment Moves	12 Weeks
Operator Training	12 Weeks
Project Close	0 Days

Table 1

Project Timeline GANTT Chart.

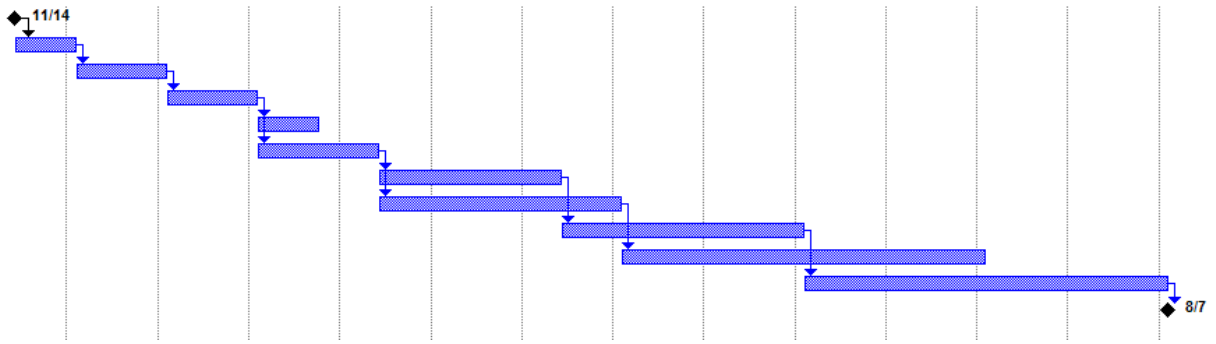


Figure 4

Cost Estimates and Budgeting.

	Number of Presses	Labor	Rigging	Facilities	Cost
Relocate					
A	11	\$21,200	\$3,000	\$5,800	\$330,000
B	2	\$15,000	\$3,000	\$7,500	\$51,000
C	1	\$50,000	\$5,000	\$8,000	\$63,000
Remove/Store					
All Types	10	\$15,000	\$2,000	\$1,000	\$180,000
Department Moves					
D	22	\$3,000	\$0	\$1,000	\$88,000
E	4	\$5,500	\$0	\$1,200	\$26,800
F	6	\$1,000	\$0	\$1,500	\$15,000
Offices	1	\$15,000	\$0	\$8,000	\$23,000
					\$776,800

Table 2

Quality Planning. Project quality control will be handled by the project team. The project leader will be responsible for the monitoring of the quality of the equipment moves based on feedback from the customers. Issues with project quality will be addressed through the team and appropriate actions will take place based on group discussion.

The equipment is expected to perform at the same level as it did before the move. The project team will rely on feedback from the customers to determine the quality level of each piece of

equipment. If equipment is found to be faulty the necessary repairs will be made to ensure that it is brought back to a satisfactory working order.

HR Planning. Successful completion of the project will require a project team. The project leader will work with the steering committee to select the best candidates for the team. The project will require that there be a representative from A, B, C, Maintenance, and Engineering on the project team.

The representatives from the production areas will be responsible for obtaining feedback from their departments on the new layout and process changes. They will also be an integral part of the training plan for new operators as the equipment additions are rolled out.

The Maintenance representative will lead the planning and scheduling of internal and external resources related to the equipment moves and facilities preparation. Maintenance will also be key in the scheduling of the proper internal resources to ensure that equipment is handled and installed properly. The bidding of contracts and procurement of supplies will be handled by the member from Engineering. Engineering will coordinate the scheduling of excess equipment storage and disbursement to subsidiaries, if appropriate.

The project leader will ultimately be responsible for the schedule, cost and, quality execution of the project. This will be accomplished by managing the team in a manner that focuses the group on quality project execution. The project leader will hold update meetings with the steering committee and report progress towards major milestones. It will be critical for the project leader to provide guidance and leadership to the team to accomplish the goals.

Communication Planning. The project leader will be responsible for communicating project information to all stakeholders involved. Team project meetings will be held on a weekly basis. The minutes from those meetings will be e-mailed to all team members and affected department managers within 1 day of the meeting. Project status reports will be given to the affected departments on a monthly basis. The project status reports will be a meeting lead by the project leader and the focus will be on the schedule and identified issues with department managers. Status updates will also be given to the steering committee on a monthly basis. The project leader will determine if additional communication is necessary and with whom the communication shall take place.

Risk Management Plan. The project leader is responsible for risk identification and risk management. Individual risks associated with the project will be evaluated by the project leader to determine the probability of occurring and the impact on the project. These risk factors will then be discussed with the steering committee. Understanding the risks associated with the project will help the project leader make better decisions.

Risk Identification. The largest risk associated with this project is the human resources factors involved. The decision to move equipment and jobs between plants always requires approval from the President. Other risks include the assumptions about the present production efficiencies between the plants. Those must hold true for the project to be financially viable. The cost estimates for moving equipment do not include any monies for rebuilding of equipment if it were to be damaged or not in proper working condition. The money for these types of expenditures would directly affect the project financials.

The other human resources risk is the ability to train qualified press operators. The assumption that current Alpha plant staff would operate the new equipment assumes that these operators are trained and perform up to expectations. The project may also be affected by other factors like work mix and actual volumes. The project is based on current volumes and trends; if these were to change significantly it would affect the financial justification for the project.

Risk Response Plan. The main risk associated with the project cannot be eliminated by the project manager without support from senior management. The human resources risk can ultimately decide if the project can move forward or if it never gets started. Once past this risk, the other risks are not so insurmountable that they significantly jeopardize the project. The financial justification is such that, even at 50% of the expected savings levels, the project will still remain a solid investment.

The project could conceivably be implemented in a small scale if the human resources piece cannot be resolved. The production planning group could assign work to workstations based on cost as the primary driver. This would increase the amount of work being distributed to Alpha, Beta, and Gamma, based on actual production costs, not based on presses available. The overall impact would not be as significant, because of the continued duplication of indirect labor resources. However, the total cost of production will decrease.

The risks that do arise as the project moves forward will be identified by the project manager and addressed by the steering committee. Active risk management will be a topic of discussion at all committee meetings to keep project risks at the forefront of the project team's minds.

Addressing risks in this manner will reduce the exposure to the identified risks.

Planned Acquisitions. The project plan deals with the relocation and redistribution of resources, both equipment and human. The majority of planned purchases will be in the form of services to move and relocate equipment within the facilities. XYZ goes through a process of bidding their work out to private contractors for a period of time. The electrical and rigging expenses will fall under these contracts. The plants have contracted with local electricians to provide support for these types of activities and this work will not be bid. XYZ also maintains a contract for the rigging of presses; therefore, XYZ receives pre-negotiated pricing for these services from their key supplier. Other items that will be up for bid will be the HVAC and foundation or structural support needs.

Planned Contracting. The contracts for the HVAC and structural needs will be sent out via the XYZ RFP process. The project team will be responsible for developing the scope of work and detailed list of specifications. Then a member of XYZ's global procurement group will serve as a liaison for the project team in drafting an RFP and the selection of these contractors. The contractor proposals will be reviewed by the project team and based on their selections the procurement specialist will then negotiate the best prices with the chosen contractors.

Managing Scope. The steering committee will provide the necessary guidance for the project team to manage the scope. The project manager will facilitate scope management during weekly project meetings. By referring back to the project management plan the team will be able to manage the scope at all points during the project. The steering committee will provide guidance as necessary.

Information Distribution. The project manager will be responsible for recording of meeting minutes and distributing those minutes. The minutes will be distributed via e-mail within 24

hours of the project team meetings. This information will be given to all project team members and steering committee members. Any other team communications will be distributed in an appropriate manner within 24 hours.

Bid Selection. The project team will evaluate and select the bid packages from the HVAC suppliers. The recommendation of the maintenance representative will be valuable for selecting this vendor. Bids will be evaluated for no longer than one week. After vendor selection occurs the procurement specialist will negotiate with the selected vendor for the best pricing.

Closing the Project. The project will be complete upon the successful execution of the project plan. The project manager will evaluate the project results and provide a closing report to the project team and steering committee. The project manager will also be responsible for closing the project within the Oracle system. The project manager will perform a status update after one year to compare the actual savings versus the anticipated savings.

CONCLUSIONS

This project plan lays the foundation for the Alpha plant to position itself for the future. Based on the current business climate and needs, this plan will allow the Alpha plant to capitalize on its most valuable assets and utilize them more effectively. The movement of equipment between the facilities will align XYZ manufacturing resources to provide the most cost effective manufacturing solution. As XYZ continues to evolve as a manufacturing organization they are going to continually need to evaluate new proposals for reducing manufacturing costs.

Remaining the low-cost producer will continue to give XYZ a competitive advantage in the marketplace, that will help them maintain a leadership position in the market. This project utilizes the core beliefs of XYZ to create a solution to what appears to be an inevitable problem.

SUGGESTIONS FOR FUTURE WORK

This project is a step forward for the Alpha plant to keep them a healthy and viable manufacturing facility for XYZ. The continuation of this process to align manufacturing resources can also provide benefits in other processes. XYZ can also apply this methodology to their small presses. Comparing departments like A, B, C, and D; there are savings that can be realized through consolidation. The benefits of this type of consolidation would be a better alignment of costs and resources. The small presses can also be moved quicker and easier than the large equipment. Not only will the consolidation help with direct product expenses, non-product expenses would be reduced as well. The reduction of support and better management of supply inventories will result in cost savings for XYZ.

XYZ also continues to evaluate the manufacturing capabilities of their subsidiaries. Often times the Epsilon plants have capabilities that are superior to those of the subsidiaries. Shifting work from slower, older presses to more efficient presses in the plants can help to reduce costs and increase margins for XYZ's subsidiaries. This type of transition of work could have far reaching impacts for the subsidiaries with regards to their current staffing. The transition would be slow, but could be very effective as a means for lowering costs.

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GLOSSARY

Zeta – the process of adding one matched color of litho to a product

Cost/m – cost per thousand

RFP – request for purchase

Secondary processes – processes such as A, B, C, etc.; that are added to product in a one-up, or small format, state

APPENDIX A

Project Appropriation

LARGE SHEET CONSOLIDATION PROJECT EVALUATION
INTERNAL SIGNATURE SHEET

Date: February 7, 2006
To: Those Listed
From: Keith Johnson
Phone: 624 **Mail:** 170
Subject: Appropriation – Large Sheet Consolidation Project

Please review the appropriation request for the project described. Indicate your approval by signing next to your name below. Feel free to contact Keith with any questions you may have at your convenience.

Signature	Date
Keith Johnson _____	_____
Tom Abbott _____	_____
Karen Something _____	_____
Chris Hadley _____	_____
Happy Gilmore _____	_____
Terry Rutgerman _____	_____

EXECUTIVE SUMMARY

LARGE SHEET CONSOLIDATION PROJECT

PURPOSE

The purpose of this project is to reduce labor costs through the consolidation of large sheet processes into the Beta and Alpha plants. The consolidation of equipment will allow for the reduction of indirect labor personnel who are duplicated between the plants. Costs will also be reduced through increased efficiencies and MR reductions.

PROPOSAL

The movement of certain large sheet processes between the three Epsilon plants will utilize valuable floor space and lower overall production costs. The consolidation will allow each plant to focus on the processes in which they excel. This move will reduce overall product manufacturing costs to help manufacturing remain globally competitive. The consolidation will also reduce assets and overhead that are underutilized today.

The relocation of A, B, and C to the Alpha plant will create a more effective manufacturing division. D equipment from Alpha would move to the Beta plant to create a center of excellence. Capitalizing on longer run lengths, reduced make-readies, and better quality systems will make this project a success. XYZ will be able to deliver products to the marketplace faster, cheaper, and higher quality utilizing current plants and assets.

BENEFITS

Reduced labor: There will be a reduction of 14 positions that are presently duplicated between the three plants.

Cost Savings: Reduced labor and increased productivity results in \$725,000 savings in 2007 and increases to 1,490,000 in 2008 after full implementation. (See Appendix B)

Workflow: The changes to the workflow should streamline the large sheet processes and accelerate schedules.

Maintenance: Reduced parts inventories and better expertise will result from this project.

Workforce: If the Boxed Product department is shut down the workforce will have additional options.

FINANCIAL MODEL

Using the XYZ financial model for the most likely situation, that requires an investment of \$776,800, the model shows an NPV of \$2,386,170 and a payback of 2.0 yrs. The after tax rate of return is 67.8% with a weighted return on assets managed of 1035.1%.

RECOMMENDATION

The recommendation is for the approval of this appropriation for the amount of \$776,800. This will allow for the relocation of 14 presses between Beta, Alpha, and Gamma plants, as well as, any other necessary moves to support this proposal.

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LARGE SHEET CONSOLIDATION PROJECT

PURPOSE

The purpose of this project is to reduce labor costs through the consolidation of large sheet processes into the Beta and Alpha plants. The consolidation of equipment will allow for the reduction of indirect labor personnel who are duplicated between the plants. Costs will also be reduced through increased efficiencies and make-ready (MR) reductions.

BACKGROUND

The Boxed Product department in Alpha has had a reduction in workload over the past 7 years of a significant volume (see Table 1). This is due to increased market competition and reduced customer sending of products. This trend has caused the size of the Box Product area to shrink significantly within the Alpha plant. The vacated space now sits idle waiting for new opportunities.

Boxed Product Production History

<u>Year</u>	<u>Total Production</u>
1999	22.5 M
2000	20.1 M
2001	17.6 M
2002	13.3 M
2003	11.2 M
2004	9.7 M
2005	8.5 M
2006	8.2 M*

** Based on current projections*

Table 1

The Epsilon plants have a rich tradition of continuous improvement. Through the years they have gained efficiencies to keep them competitive in the global marketplace. The Alpha plant has developed a niche with certain processes that have consistently made it be the lowest cost producer in the corporation. Alpha attributes this to their stable workforce, strong management, and a commitment to continuous improvement. The expertise of the Alpha plant within the areas of A, B, C, D, and E; help Alpha to be a world class operation.

The ability to produce at a low cost is a critical business advantage for XYZ. The ability of the Alpha plant to consistently meet those needs is a business imperative. The effective use of XYZ assets to their full abilities will allow XYZ to continue to be a low cost leader in the manufacture of product. Within the processes listed, Alpha has the lowest cost/m of any of the manufacturing plants, with the exception of B (see Table 2).

Plant Cost/M Measures

	Alpha	Beta	Gamma
A	\$32.78	\$34.42	\$35.07
B	\$101.25	\$91.13	\$ -
C	\$67.23	\$77.31	\$81.01
D	\$45.58	\$50.14	\$56.06
E	\$45.32	\$49.85	\$ -

Table 2

Utilizing the low cost producer for each process will allow XYZ to better utilize their assets while reducing overall product costs. For this reason the A, B, C, and D processes should be housed in Alpha.

The closing of Delta manufacturing in 2002, created a space issue in the Beta plant. Beta received most of the equipment and personnel from the closing of the Delta plant. Now the Beta plant is at full capacity with little to no room for expansion. The removal of some of the large presses will free up valuable expansion space for the Beta plant.

The Gamma plant houses mainly the alternate product lines. They do have some limited production but it only represents about 10% of the total production of product. The removal of this equipment in Gamma will allow them to consolidate their operations from two buildings to potentially one building allowing XYZ to sell one of the unnecessary sites.

There are significant benefits as a corporation to make the move to consolidate the large presses within the Alpha and Beta facilities. It will allow the plant to focus on the processes in which they excel. This move will reduce overall manufacturing costs to help manufacturing remain globally competitive. Finally, it will reduce assets and overhead that are underutilized today.

PROPOSAL

The Alpha plant prides itself on producing a quality and low cost product for XYZ. By focusing on costs the potential to reduce overhead exists by implementing a consolidation project. The movement of certain large sheet processes to the Alpha facility will utilize valuable floor space and lower overall production costs.

The relocation of A, B, C, and D to the Alpha plant will create a more effective manufacturing division. The plan would relocate this equipment from the Beta and Gamma plants to Alpha where it would be used to its full capabilities.

Capitalizing on longer run lengths, reduced make-readies, and better quality systems will make this project a success. XYZ will be able to deliver products to the marketplace faster, cheaper, and higher quality utilizing current plants and assets.

XYZ currently has 20 A presses. Based on forecasting by master planning for 2005 there is only a need for 14 presses. Alpha currently has 10 A presses on the floor. All but one of which are the most efficient in their size class. Therefore, Alpha would utilize 4 presses (104EZ, 104, 1240, 102) from the Beta facility and one (102) from the Gamma plant. The high speed presses from Beta will be moved and the newest press from Gamma as well. The additional presses will be sold, placed in storage, or given to XYZ subsidiaries.

For emboss there are 3.5 (half of one presses capacity is emboss the other half is diecut) presses in Alpha. Master planning forecasts a peak need of 5.0 presses for 2005. The two A 1040 presses in Beta would need to be moved to Alpha. The two presses would be placed in a manner where they could use a common platform and utilize a straight 8 schedule to reduce costs.

The B presses would be critical for the move; Alpha currently outperforms Beta by 15% in this process. This is due to the flexible staffing practices that have been adopted in Alpha, and recent process improvements. Alpha would acquire all 4 of Beta's B presses. The presses would be placed in two sets of two with common platforms to facilitate the operators backing up one another. Master planning forecasts that 10.5 presses are needed; however, there are no plans to add additional B capacity. Additional work will continue to be outsourced.

Beta has the best suited environment for printing. It makes sense with the new C initiatives and the two new presses being purchased that this equipment be relocated to Beta. It will occupy more of their valuable space, but with the vacancy created by moving the A presses, the two additional presses will fit nicely into their plant. Master planning forecasts a need for 3.3 presses, realizing the benefits of the new presses. Beta would receive the two new presses, one large format, and one small format press from Alpha.

Finally, the E press would be moved from Beta and located next to the other E press in Alpha. The first E was installed in Alpha and the most recent history shows that it outperforms Beta's E by 10%. Alpha's expertise with this press will improve performance and reduce indirect staffing by eliminating duplicate positions. Also, having both presses in one facility increases the justification for on-site die making to reduce cycle times and tooling costs.

Within the Alpha plant there will have to be some accommodations made to allow the new equipment to be placed in the most efficient location. For this reason, the A, B, and C departments will need to be relocated to the 2nd floor. These smaller machines do not need to be on the 1st floor. The space that they currently occupy could be better utilized for the large presses that require additional installation costs if they are placed on the 2nd floor. This internal relocation will require the construction of a new office on the 2nd floor to give the A and B managers a place to relocate.

The Boxed Product department has secured the bid for the 2006 XYZ boxed product production. The department's livelihood beyond 2006 is still in question given the current pressures from global competitors. If the decision is made to outsource boxed products, this plan for equipment moves could be completed in 9 months. A detailed project timeline can be found in the Appendix C.

JUSTIFICATION

The purpose of this project is to reduce labor costs through the consolidation of large sheet processes into the Beta and Alpha plants.

The reduction of indirect staffing between the three plants is the largest financial driver for the project. Indirect staffing includes clerks, stockhandlers, supervisors, and press prep. The consolidation of these five departments will result in the reduction of 14 redundant positions. This will generate a savings of \$770,000 annually, based on current average salaries. Table 3 provides some detail with regards to the indirect labor savings.

Indirect Labor Savings

	Supervision		Clerk		Stock		Fixed Code 70		Labor Savings (Average salary \$55,000)
	Consolidation	GE Process Improvements	Consolidation	GE Process Improvements	Consolidation	GE Process Improvements	Consolidation	GE Process Improvements	
A	2	1	1	1	1	1	1		\$440,000
B	1		1		1		1		\$220,000
C			0.5						\$27,500
D			0.5						\$27,500
E							1		\$55,000
									\$770,000

Total Reduction **14**
Savings **\$770,000**

* savings estimates are based on the input of the steering team

Table 3

Productivity increases will be realized through the implementation of this project. The reduction of make-ready times, longer runs, and process improvements will account for a significant amount of the savings. The steering team set the expected improvement levels based on historical data and future expectations. These calculations can be found in Table 4.

Productivity Savings

	Labor Hours	Productivity Improvement	Labor Hours Saved	Direct Labor Rate	Direct Labor Savings
A	235,840	5.0%	11,792	\$31.98	\$377,108
B	18,320	10.0%	1,832	\$37.83	\$69,305
C	14,397	15.0%	2,160	\$38.27	\$82,648
D	9,600	10.0%	960	\$38.27	\$36,739
E	6,400	10.0%	640	\$38.51	\$24,646
Total					\$590,446

Table 4

The proposal does not come without some drawbacks. There will be initial costs of relocating departments within Alpha, along with the costs of moving the equipment between the facilities. The total cost estimates for the equipment moves can be found in the Appendix. A summary version of the cost breakdowns can be found in Table 5.

Equipment Movement Costs

	Number of Presses	Labor	Rigging	Facilities	Cost
Relocate					
A	11	\$21,200	\$3,000	\$5,800	\$330,000
B	2	\$15,000	\$3,000	\$7,500	\$51,000
C	1	\$50,000	\$5,000	\$8,000	\$63,000
Remove/Store					
All Types	10	\$15,000	\$2,000	\$1,000	\$180,000
Department Moves					
D	22	\$3,000	\$0	\$1,000	\$88,000
E	4	\$5,500	\$0	\$1,200	\$26,800

F	6	\$1,000	\$0	\$1,500	\$15,000
Offices	1	\$15,000	\$0	\$8,000	\$23,000
					\$776,800

Table 5

The other main cost of the project will be the additional shipping costs that will be added due to the shipping of WIP between Alpha and Beta. Beta still will have responsibility for packaging 50% of the counter product volume. This will mean that product that would have begun in Beta is now being shipped to Alpha from the suppliers and then to Beta for further processing. Additionally, all B work will be moving through Beta as well, with some of that work being packaged in Alpha. The estimated annual cost for the additional shipping is \$300,000.

Other facets of this project that will bring improvements are quality, supplies, and parts inventories. The consolidation of A equipment will allow for reduced parts inventories for maintenance. Ink inventory for B will no longer be needed at both facilities. The same will be true for E. Product quality will also be a contributor to the success of the project. If spoilage is reduced by 5% due to longer runs, less make-ready, and improved processes XYZ can expect an additional \$50,000 of reduced spoilage costs.

FINANCIAL MODEL

Using the XYZ financial model, and inputting the most likely situation that requires an investment of \$776,800, the model shows an NPV of \$2,386,170 and a payback of 2.0 yrs. The after tax rate of return is 67.8% with a weighted return on assets managed of 1035.1%.

** For financial model details see Appendix B*

SENSITIVITY

Best Case

The best case scenario would reduce the labor by 16 people and increase the productivity savings estimates by 30% and spoilage savings by 50%. The project costs would also be 10% less. The confidence level of this scenario is 5%. Financial model values are shown in the table below.

NPV	\$3,407,505
-----	-------------

Discounted Payback	1.5 yrs.
After-Tax IRR	94.9%
Weighted Average ROAM	1507.1%

Most Likely

The most likely scenario would be to reduce the labor by 14 people and generate productivity savings of \$590,000. The confidence level of this scenario is 85%. Financial model values are shown in the table below.

NPV	\$2,386,170
Discounted Payback	2.0 yrs.
After-Tax IRR	67.8%
Weighted Average ROAM	1035.1%

Worst Case

The worst case scenario would reduce the labor by 9 operators rather than 14. The additional savings would be reduced by 50% for productivity and spoilage. The project costs would be 25% higher. The confidence level for this scenario is 10%. Financial model values are shown in the table below.

NPV	\$293,975
Discounted Payback	6.1 yrs.
After-Tax IRR	18.6%
Weighted Average ROAM	310.2%

BENEFITS

Reduced labor: There will be a reduction of 14 positions that are presently duplicated between the three plants.

Cost Savings: Reduced labor and increased productivity results in \$725,000 savings in 2007 and increases to \$1,490,000 in 2008 after full implementation. (See Appendix B)

Workflow: The changes to the workflow should streamline the large sheet processes and accelerate schedules.

Maintenance: Reduced parts inventories and better expertise will result from this project.

Workforce: If the Boxed Product department is shut down, XYZ will have additional options for the workforce.

ASSUMPTIONS

- Historical performance trends continue to remain constant between the three plants
- Estimates for the reduced indirect labor are accurate
- Average indirect salary is \$55,000 per year
- Average inflation rate over the life of the project to be 3%
- Average tax and burden rate to remain constant at 1.64
- Transportation cost estimates are accurate for the amount of volume projected between the plants
- Master planning forecasts are accurate with regards to historical trends
- Current work mix does not show a significant change in the future
- Average press capacity will increase as productivity improvements are made
- Beta, Gamma, and senior management are in agreement as to the outcomes of this project

RECOMMENDATION

The recommendation is for the approval of this appropriation for the amount of \$776,800. This will allow for the relocation of 14 presses between Beta, Alpha, and Gamma plants, as well as, any other necessary moves to support this proposal.

APPENDIX B

XYZ Financial Models

Best Case

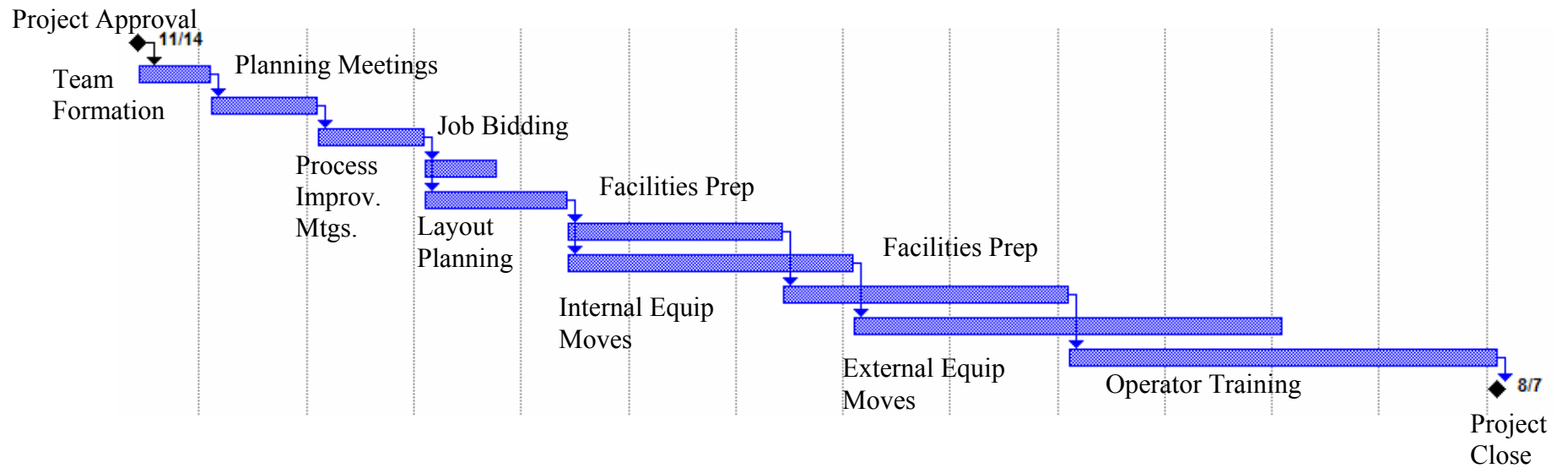
Most Likely

Worst Case

APPENDIX C

Project Schedule

Nine Month Project Schedule



APPENDIX D

Floor Layouts