

Technical Services Quality Manual

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Document Number: TS-0001

Revision Number: 010

Change Log

Revision Date	Approval	Description of Change
October 2, 2013	Rick Meaney	Initial Release
		Changes to sections 3-A, 3-B, and 12
March 10, 2014	Rick Meaney	Changes to Quality Policy and section 3-F
July 15, 2014	Rick Meaney	Name change to section 8 and change to section 8-C
December 10, 2014	Rick Meaney	Change to appendix 4.5 and new section 2-D
May 27, 2015	Rick Meaney	Updates to sections 1-B, 3-A, 3-B, 3-C, 3-D, 4-D And 4-E.
February 7, 2017	Rick Meaney	Update to ISO 9001:2015 Standard
September 22, 2017	Rick Meaney	Update and corrections to sections 4.3, 4.4, 5.2, 5.3, 6.2, 6.3, 7.1, 8
August 2, 2019	Rick Meaney	Update Sections 7.1.5, 8.1, 8.4.1, Appendix 1
July 23, 2021	Rick Meaney	Update Sections 8.7, 10.2

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4 Context of Organization

4.1 Context of the Department of Technical Services

The Department of Technical Services provides a broad suite of service offerings to the University community. It offers highly trained technologists and craftspeople, specialized equipment, and quality-focused workflow management to support researchers, students and support divisions throughout the University and at multiple campuses. The activities undertaken by Technical Services are reviewed on an ongoing basis, and services evolve based on demand and customer feedback.

Technical Services strives to focus particularly on those activities where it can achieve economies of scale, or fill a need or a niche that is not readily available in the local community. Memorial University is situated in a geographically remote location in a small metropolitan area, and many of the specialized services required by this major research intensive institution are not available in the local community. Therefore this department offers state-of-the-art services to ensure that Memorial's researchers have access to the same services as their colleagues in other universities. To accomplish this, the department strives to stay current with technology and ensure that employees are appropriately trained and certified. As well the Department strives to offers services that are not otherwise available in the local market. Technologies are continually evolving as are the capabilities of local vendors and as technologies change, the requirements of the research community also changes.

At Memorial, Technical Services is a centralized unit with users in essentially all faculties and campuses. This is clearly evident in Figure 1 (based on 2014-15 fiscal year data) which demonstrates the workload distribution by faculty or user group. The Department's workload is broadly distributed throughout the institution and although disciplines requiring more laboratories or physical research are more frequent users no one faculty is clearly dominant. Furthermore, Technical Services has established a client service approach and a high degree of user satisfaction is essential to maintaining client demand.

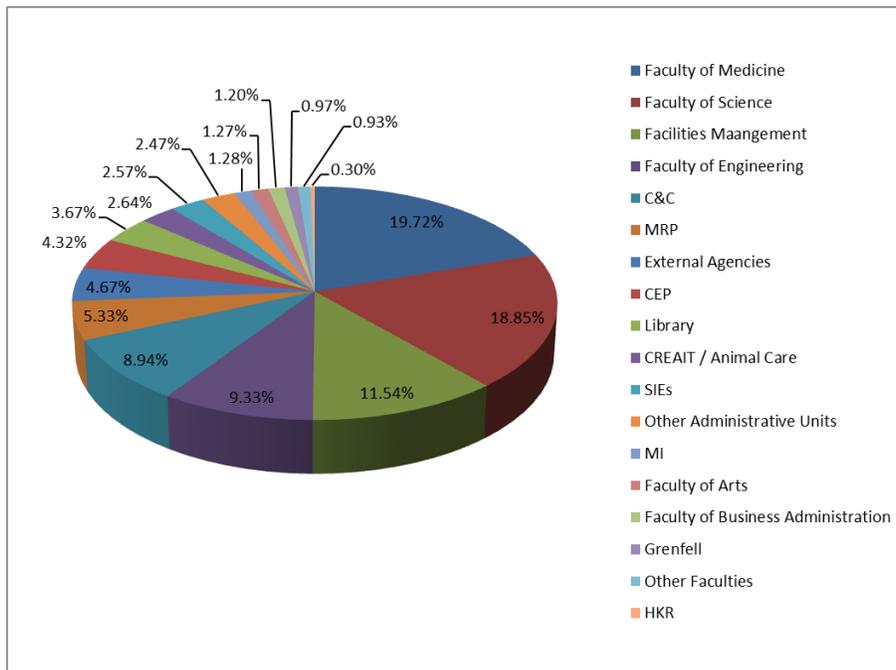


Figure 1: Activity Distribution by User Group

All activities performed by the Department are done so under a work order upon request from the user, and material and labor costs are charged to each individual work order. It is intended that the cost of materials and other project related consumables are the responsibility of the users. The charges for labor vary depending on the nature of the work. For example the cost of labor for Memorial researchers and other direct internal activities is charged at a subsidized rate and work performed for external agencies is charged at a rate equivalent to the full market rate. A subsidized labor rate creates a significant competitive advantage for Memorial’s researchers while market rate for external work encourages clients to use local vendors for routine activities.

As a service unit within Memorial University, the Department of Technical Services is influenced by a range of internal and external issues which can impact its ability to achieve the intended results of this quality management system. Internal factors include: allocated space; equipment, tools and instruments; employees skills, training and certifications; and financial recoveries from work performed. External factors include: overall research funding and status of the University’s operating budget; changes in technology; the collective agreement with the employees; capability of local service providers; commodity and material costs; building maintenance; and information technology infrastructure.

The availability of resources and appropriate funding is critical to any organization and the Department of Technical Services receives funding through a variety of sources. Most important is the base allocation from the University. However, this allocation alone is not sufficient to operate the unit and therefore fees are collected for the work that is performed. Overall research activity and the general wellbeing of the University’s operating grant has a significant impact on the availability of resources, and maintaining exceptional service through this quality management system helps to secure the maximum share of these resources.

4.2 Interested Parties

Clients	<ul style="list-style-type: none"> - Departments, faculty, staff, students, and external entities that get work completed at Technical Services.
Human Resources	<ul style="list-style-type: none"> - Responsible for Human Resource policies and procedures for Memorial University. - Responsible for dealing with unions at Memorial University. - Responsible for Payroll. - Responsible to ensure Human Resources processes are being followed.
Financial Services	<ul style="list-style-type: none"> - Responsible for financial policies and procedures for Memorial University. - Responsible for tracking departmental budgets. - Responsible to ensure financial processes are being followed.
Vice-President of Research Office	<ul style="list-style-type: none"> - Responsible to ensure that Technical Services is meeting all administrative, policy, and procedure commitments as set forth by the Board of Regents, and the Office of the President. - Responsible to set the financial allocation for Technical Services.
CUPE 1615 (Union)	<ul style="list-style-type: none"> - Represent the unionized employees at Technical Services.

Technical Services Employees	- Responsible for the operation of the Quality Management System.
Environmental Health & Safety	- Responsible for Health & Safety policy and procedures for Memorial University. - Responsible for Incident management/accident investigations.
Suppliers	- The various vendors who supply parts and materials.

4.3 Scope

The scope of this quality management system applies to the Department of Technical Services, and all of its associated facilities distributed throughout Memorial University. It will also include all activities performed by Technical Services to fulfill our mandate to provide technical support to the various departments within Memorial University. As part of this it will include all equipment, and personnel both directly and indirectly providing service to our clients. The department’s director is responsible for all aspects of the implementation and ongoing operation of the quality management system.

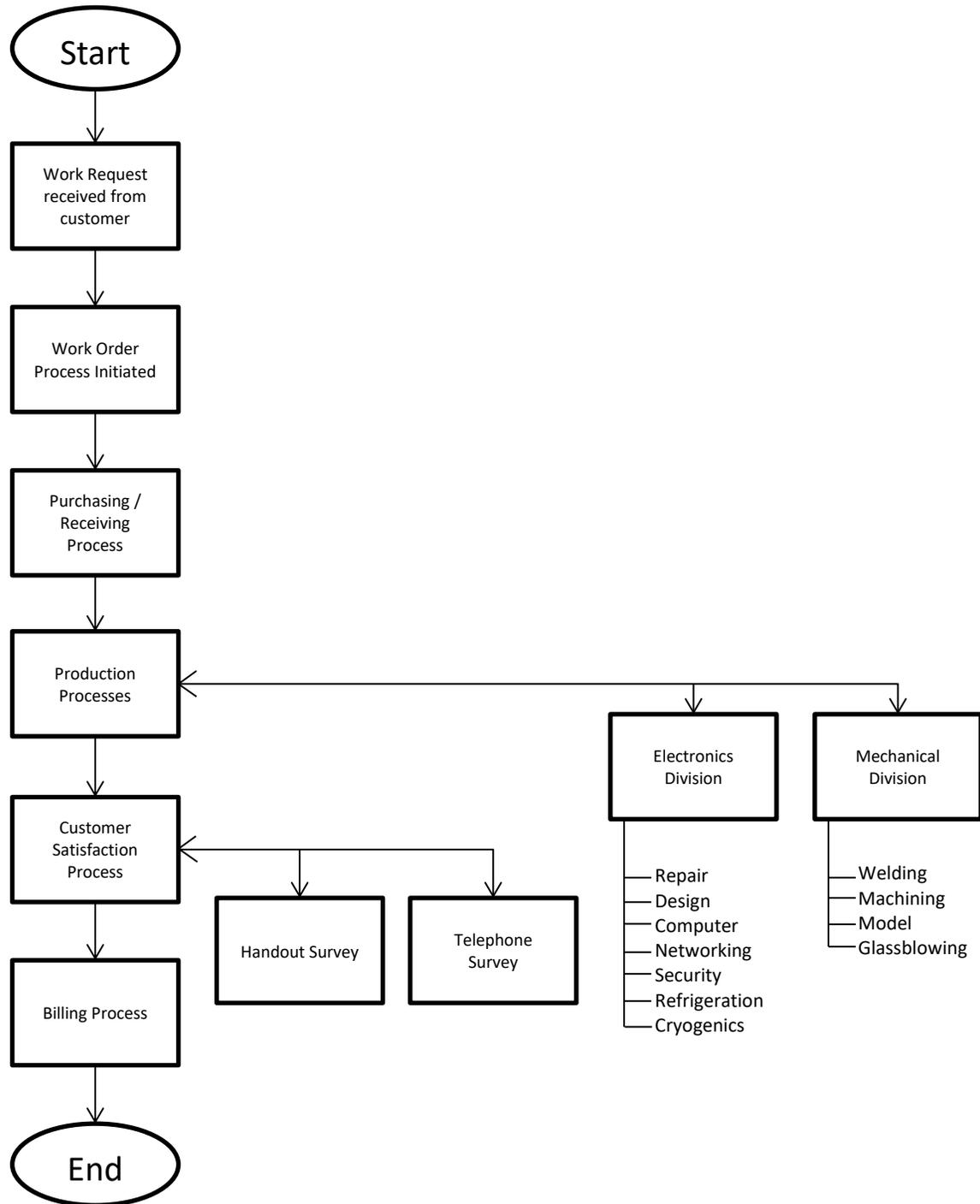
As part of Memorial University, we are required to operate within the policy and procedures as set forth by the university Policy Framework.

Due to the nature of the services provided by Technical Services, all sections of the standard apply to our operations. This would include our Mechanical Division providing welding, machine, glassblowing, and model making services; as well as our Electronics Division providing repair, design, refrigeration, computer, and cryogenics services.

4.4 Quality Management System and its Processes

As with all organizations, Technical Services has a number of processes used in daily operations. The sequence of these processes can be seen in the following flow diagram.

Process Sequence



The key business processes used on a daily basis are the Work Order, and Billing processes.

4.4.1 Work Order Process

The Work Order Process is used to outline the proper flow of a customer generated work request through Technical Services. The process is initiated upon the receipt of the work request from the customer, and finishes when the customer receives the finished product or service.

Most shops in the Mechanical and Electronic Divisions will use the same process for work orders. Areas such as the Medical School, School of Pharmacy, School of Nursing, Department of Physics, Library, Campus Enforcement, and Computers and Communications issue a work order covering a specified period of time. The employees working in these shops are dedicated to their particular areas. The flow diagrams for the Work Order Process can be seen in appendix 1.

The only exception is the Cryogenics Plant. This is the only area of Technical Services that manufactures a product, namely liquid Nitrogen and liquid Helium. In this area the customer will issue a work request to cover a period of time. The amount of product dispensed is then recorded and billed monthly. The flow diagram for this process can be seen in appendix 1.

4.4.2 Billing Process

As with any organization, the customer Billing Process is very important, with one of the more important aspects of this process being customer satisfaction. This is achieved by allowing the customer to see that a fair price was paid for the product or service delivered.

Although Technical Services is responsible for billing customers, the department must follow the process established by financial services. This process allows for automated and manual billing of internal and affiliated Memorial University customers. It also outlines how external customers are to be billed. The flow diagram for this process can be seen in appendix 1.

5 Leadership

5.1 Leadership and Commitment

The management team at Technical Services is committed to supporting this quality management system by demonstrating leadership throughout the operation. Furthermore recognizing that the Department's Director is fully accountable for this system helps to ensure its effectiveness. This system has been developed to support the Department's specific requirements and has been fully integrated with its business processes. This system also recognizes the Department's role within the broader University. A process approach has been applied to the development of this system and suitable protocols are established to understand and manage risk.

Resources are available to allow for the effective implementation and ongoing operation of the quality management system. These resources include, but are not limited to: suitable facilities and equipment, skilled technical employees, administrative staff, ongoing professional development, maintenance, calibration and verification programs, document management, and dedicated personnel.

Effective communication is an integral component of the system. Regular reporting at the administrative meetings and an annual management review helps to ensure that the expected results are being achieved. These forums also provided an opportunity to validate and if necessary update the quality policy and business objectives. As well, new employees are provided an orientation of the system and ongoing internal audits help to determine the effectiveness of the communication strategies.

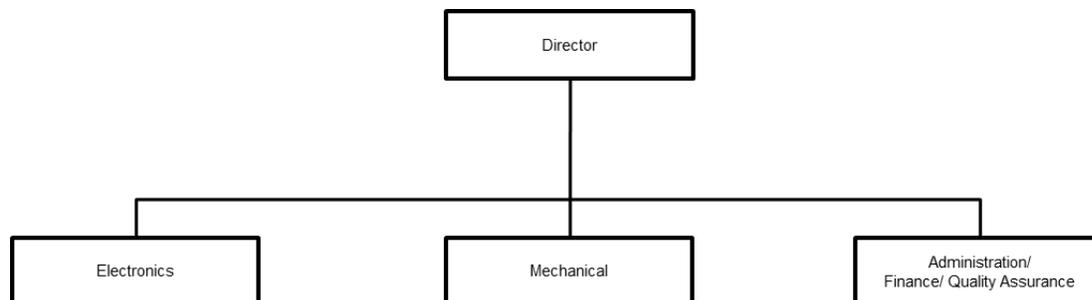
5.2 Quality Policy

Technical Services provides electronic and mechanical design, fabrication and repair services to support the Research and Academic activities of Memorial University. We will meet all customer requirements, ensure on-time delivery, effective communications, and ensure statutory and regulatory compliance for all projects.

This is accomplished by using state of the art equipment and trained personnel, in a safe working environment.

Our goal is to ensure customer satisfaction, through a quality management system, that reinforces the department's commitment to continual improvement.

5.3 Organizational Roles, Responsibilities, and Authorities



As with any organization, the responsibilities and authorities of the different positions must be established to ensure the individuals in these positions have a clear understanding of what they can and cannot do. Outlined below are the responsibilities and authorities for the management positions at Technical Services.

Director

1. Ensure departmental compliance and communication of the Quality Management System.
2. Overall budget allocations and allotment.
3. Ensuring departmental compliance to all University Policies and Procedures.
4. Contract approval with outside vendors.
5. Allocation of Resources
6. Review and approve both MP2 and Banner purchase requisitions.
7. Review and final approval of all Quality Management System related controlled documents and records.
8. Review, analyze and implement solutions for any non-conformity related to the department.

Finance/Administration/Quality Assurance Manager

1. Oversees all revenues and expenditures.
2. Prepare budget submissions.
3. Prepare monthly budget statements.
4. Administer all Human Resources activities.
5. Oversee operation of the Quality Management System in accordance with the authority and delegation of the Director.
6. Review all financial system activities for compliance to the University Policies and Procedures.
7. Review financial system activities for compliance to the Quality Management System.
8. Review and approve both MP2 and Banner purchase requisitions.
9. Conduct the Management Review Meeting.

Division Manager

1. Overall operational and administrative management of all division staff.
2. Overall operational and administrative management of all division work orders and projects, including scheduling and delivery.
3. Budget requests for purchase of tools and equipment over \$10,000.00.
4. Ensure division compliance to the University Policies and Procedures.
5. Ensure division compliance to the Quality Management System.
6. Review work related price quotes for projects.
7. Follow up on larger or multidisciplinary projects.
8. Review and approve purchase requisitions up to \$10,000.00.
9. Oversee divisional safety issues.
10. Review, analyze and implement solutions for any non-conformity related to the division.

Shop Supervisors

1. Manage daily schedule and work assignments for the shop.
2. Assign work orders to individuals in the shop.
3. Ensure shop compliance to the University Policies and Procedures.
4. Ensure shop compliance to the Quality Management System.
5. Any disciplinary actions which can be handled at the shop level.
6. Orientation of new staff.
7. Prepare requested Price Quotes on projects, repairs or services to be provided.
8. Oversee shop maintenance.
9. Oversee shop safety issues and items.

10. Review and approve purchase requisitions up to \$1000.00 on approved work orders.
11. Start work orders on MP2 and assign work order number to work card.
12. Review MP2 work order after job has been completed and mark it as complete.
13. Review of non-conforming equipment returned to the shop for repair.
14. Review, analyze and implement solutions for any non-conformity related to the shop.

6. Planning

6.1 Actions to address risks and opportunities

As part of Memorial University's overall structure, an Office of the Chief Risk Officer (OCRO) has been established. The mission of the Office of the Chief Risk Officer is to work collaboratively with the Memorial University community to provide a safe, secure and healthy environment with a managed, proactive approach to risk through engagement and education that supports teaching, learning, living and working on campus.

In keeping with this, the OCRO has collaborated with Technical Services to produce a Risk Register. This register is used to identify any risks and opportunities that are applicable to the department. The information contained in this Risk Registry is as follows:

1. Risk/Opportunity – A name given to the risk/opportunity.
2. Description – A description of the risk/opportunity.
3. Inherent Risk Rating – An initial rating of the risk/opportunity.
4. Key Risk Indicators – Factors indicating the presence of a risk/opportunity.
5. Notes – Any applicable notes on the risk/opportunity.
6. Controls – Any controls in place to mitigate the risk or take advantage of the opportunity.
7. Residual Risk Rating – Risk/opportunity rating after controls have been applied.
8. Planned Actions – Any planned actions to mitigate the risk or take advantage of the opportunity.

Once the risk registry has been completed, a copy is forwarded to Technical Services. The department will then work on any planned actions to mitigate any risks identified or take advantage of any opportunities that may be present. The control of this document is maintained by the OCRO.

6.2 Quality Objectives and planning to achieve them

To ensure that Technical Services is accomplishing our goals, as outlined in the Quality Policy, we have developed three core Quality Objectives. These objectives will be used to measure our success in regards to meeting the requirements of our Customers, and Employees and to measure effectiveness of our Quality Management system.

1. To measure customer satisfaction on an ongoing basis, with an emphasis on continual improvement of the effectiveness of our quality management system.
2. An on-going review of employee utilization.
3. An on-going review of financial position and revenue generation.
4. To provide a safe work environment to all levels of Technical Services.

To verify that we are meeting these objectives, a method of measuring each objective and the desired goals have been established.

Customer Satisfaction

While being one of the more challenging parameters to measure in a Quality Management System, Customer Satisfaction is one of the most important. At Technical Services, we will use two separate methods of measurement to gauge the customer satisfaction with the department.

The first method of measurement will be a monthly telephone survey of a random sample of customers. The random sample will consist of the highest price work order for each shop that has been completed and billed during that month. The telephone survey questionnaire is document TS-0029.

The second method of measurement will be the handout customer satisfaction survey. These surveys are to be distributed to the customer when their job is completed and the equipment or service has been delivered. The handout survey questionnaire is document number TS-0030.

Our overall goal is to have a customer satisfaction level greater than 90% for the department and for each workshop in the department. The data resulting from the customer satisfaction measurements will be analyzed to see where improvements to the department, workshops, and the quality system can be achieved.

Professional Development

Professional Development is essential to enable our employees to provide products and services that consistently meet the requirements of our customers. To further this, Technical Services will commit a percentage of our annual operating budget to professional development within the department. To ensure that these resources are being used, and the types of training being undertaken are relevant, the following measures will be performed:

1. The Administration/Financial/Quality Assurance Manager will include training expenses within the regular financial reports (usually monthly). The goal is to use greater than 80% of the allocated training budget. The information for this will form part of the financial statements for the department.
2. On an ongoing basis the division managers will review the training that has been undertaken by their division. This review will be part of the Administrative Meeting process. Also at this time, the division managers will present any upcoming required and employee requested training.

Professional Development or training is an agenda item on our Administrative Meetings. At this meeting the reports required for this objective will be presented to senior management. The results from these reports will be analyzed to develop a long term professional development strategy for the department, and ensure that our objective is being met.

Safe Work Environment

At Memorial University, Environment Health and Safety is responsible to ensure a safe work environment is provided. The department oversees all aspects of health, safety, and environmental program development, measurement, and management within the university.

To meet provincial legislation, Environment Health and Safety has established safety committee's for each building on campus. Where possible, Technical Services is represented on the committee for each of the buildings that we have facilities in.

As part of the mandate for these safety committees, they perform annual inspections of all facilities in their respective buildings. The results of these inspections are forwarded to Technical Services. Technical Services is then responsible to correct any deficiencies outlined in the inspection report.

6.3 Planning of Change

Continual improvement and change are an important part of any quality management system. Before any changes to the quality management system are made, the following steps are taken:

1. Determine the purpose and impact of any proposed change on the quality management system in regards to potential consequences and system integrity.
2. The resources required to make the change are identified.
3. If feasible the change is approved by the director and resources, responsibilities, and authorities are allocated to the project.

7 Support

7.1 Resources

7.1.1 General

Customer satisfaction and the Quality Management System play an important role in Technical Services. To ensure that there are sufficient resource available for the Quality Management System the position of Manager of Finance, Administration and Quality Assurance has been established. One of the responsibilities of this position is to oversee the implementation and management of the Quality Management System in accordance with the authority and delegation of the Director.

To ensure the continual operation and improvement of the Quality Management System, both physical and information technology resources have been dedicated.

Along with their other qualifications, the Manager of Finance, Administration and Quality Assurance is required to have or undertake the training required to implement and maintain the Quality Management System.

7.1.2 People

Memorial University, as an entity, is comprised of many different departments focused on areas such as Academics, Research, Administration and Support Services. To maintain consistent human resource services to the different areas, the Department of Human Resources is mandated with developing and maintaining all applicable policies and procedures. The policies and procedures developed by the department of Human Resources covers such areas as recruiting, leave, professional development, and employee relations. A better understanding of the department of Human Resources and their responsibilities and services can be seen on their website, www.mun.ca/hr/.

Technical Services, as a part of Memorial University, is required to administer these policies and procedures to meet the operational requirements of the department. The areas that have the biggest impact on the daily operations of the department are recruiting, job evaluation, and leave management. The Recruiting policy explains how a job posting moves through the process, leading to a new employee starting work for Technical Services. The forms required for the recruiting process can be obtained from the Human Resources tab on the my.mun web portal.

As part of recruitment for the department, employee orientation must also be considered. The process for orientation of new employees can be seen in appendix 2. This process will cover new employees coming from both internal and external sources.

Job Evaluation at Memorial University is an on-going process. It has been recognized that over time the responsibilities and duties for a position can change significantly. With this in mind, this process gives the employee the ability to demonstrate how their work has changed. These changes are evaluated and used to determine where the position should sit on the established pay scales.

The Leave Management policy outlines the different types of leave available to employees of Memorial University and the requirements for accessing each type of leave. It is the responsibility of Technical Services to administer the Leave Policy to maintain the operational requirements for the department. The

forms required to access the different types of leave can be accessed at the Human Resources tab on the my.mun web portal.

7.1.3 Infrastructure

Technical Services is physically located in a number of separate buildings throughout Memorial University. The locations and functions, of these workshops can be seen in tables 1. As part of Memorial University, the various workshops have their general physical maintenance and custodial work performed by the Department of Facilities Management. Due to the different types of work carried out in workshops, the maintenance and materials handling for each location will be unique. This requires that some of the shop maintenance be performed by the Technical Services personnel in the individual shop. The type of maintenance referred to here is for the equipment used to produce the product or service being provided by Technical Services.

To ensure the best possible product or service for our clients, Technical Services has established a Preventive Maintenance and Calibration / Verification program for various pieces of equipment used throughout the workshops. This program is based on the equipment manufacturer’s recommended maintenance procedures. Where no manufacturer procedure exists, an acceptable procedure is developed and implemented.

Building	Services Provided
Engineering	Machine Servicing, Fabrication, Welding, Model Fabrication, Painting, Electronic Design and Prototyping
Health Science Center	Machine Servicing, Fabrication, Biomedical / Electronics
Chemistry	General Electronics, Refrigeration, Cryogenics, Machine Servicing, Fabrication, Welding, Scientific Glass Blowing
Science	Microscope, Audio Visual, Fit-Testing, Biosafety/Fume Hood Testing
QE II Library	Computer, Networking & Security

Table 1: Building and Services Provided.

7.1.4 Environment for the operation of processes

As part of Memorial University, Technical Services follows the policies and procedures outlined by the Board of Regents as to the social, psychological, and physical environment throughout the department. The university has a number of social clubs and societies that employees can become involved. It has also established an independent Employee Assistance Program through the department of Human resources.

The physical conditions in each work shop are dictated by a number of factors specific to each location. Cleaning, maintenance, electrical and ventilation services are the responsibility of the Facilities Management Department.

7.1.5 Monitoring and Measuring Resources

7.1.5.1 General

Due to the wide variety of equipment we service, design and development projects we undertake, and the departments we provide service to, monitoring and measuring devices play an important role in Technical Services. The proper operation of this equipment is vital to our ability to provide a quality product and service to our customers.

To ensure the proper operation of this equipment, Technical Services has implemented procedures to verify the accuracy of the equipment used. If the equipment being verified does not meet established standards, it is to be either repaired, calibrated, or replaced.

These verification procedures will be carried out on an annual basis and records kept to maintain a history on each piece of equipment. The records produced as part of these procedures will be maintained by the Electronics and Mechanical division manager, or designated individual. The division managers, will be responsible for ensuring the proper operation of this process. This will include the updating of the verification procedures, and timely storage and maintenance of all associated records.

The procedures and associated forms can be accessed on the Technical Services website. This is used to ensure timely access to anyone who may require access to these documents. The location of this webpage is www.mun.ca/research/resources/ts/qa/cal-ver/index.php.

After completing a verification procedure on a piece of equipment, a calibration sticker is to be attached. This sticker will contain the following information:

1. The initials of the person who performed the verification procedure.
2. The date the next verification is due.

The only exceptions to using the sticker would be if the sticker impeded the proper operation of the unit being verified.

As part of this process, each piece of equipment falling under the Monitoring and Measuring Devices Process must be identified with a unique equipment number. These numbers will be used to link the equipment to the verification records produced by this process.

7.1.5.2 Measurement Traceability

To ensure the validity of the Monitoring and Measuring Devices Process, all verifications are to be performed using certified test pieces and proper handling technique. The various testing pieces such as weights, measuring gauges, electronic sources, etc. are to be certified and traceable to an international recognized standard.

The physical test pieces such as weights and measuring gauges shall be certified every three years. The electronics based test equipment shall be certified on an annual basis.

The division managers are responsible for maintaining the certifications and records for the various pieces of verification test equipment used in their division.

7.1.6 Organizational Knowledge

The knowledge to operate Technical Services on a daily basis comes from a number of different sources. As part of Memorial University, we must follow the policies and procedures approved by the Board of Regents. This will include all administrative, financial, human resource, and academic policies and procedures. These policies and procedures can be found on the Memorial University website, <http://www.mun.ca/policy/>.

Along with Memorial University's policies and procedures, Technical Services has implemented a number of processes outlining the daily operations of the department. The processes followed by Technical Services can be found in our Quality Manual. The Quality Manual is primarily available on the Technical Services website, <http://www.mun.ca/research/resources/ts/QMSDocuments.php>.

7.2 Competence

Due to the nature of the work performed by Technical Services, employee training is very important. As qualified technologists and craftsmen in the various disciplines within Technical Services, employees are expected to have and maintain specified levels of training and/or certification, as required for their position. A list of the positions and the expected training and/or certifications required is maintained by Human Resources. Accordingly, if an employee is required to assume a new duty or function, the appropriate training may be provided.

Along with this, Memorial University offers a number of avenues for employees to further their careers. These possibilities come in the form of non-credit professional and/or skills development courses, certificate programs, university credit courses, and Human Resources sponsored courses. These courses are available to all employees of Memorial University.

All training undertaken by university employees is processed through the department of Human Resources. The university's policy on training can be seen on the policies and procedures website www.mun.ca/policy/. As part of the policy, all employees undertaking training for any reason are required to submit a training request form. The various training request forms can be obtained on the employee tab of the my.mun web portal.

The department of Technical Services will also maintain a current record of what training has been completed by each employee. This record is to be housed in the Administrative office and maintained by the executive secretary. The record itself consists of a listing of all the employees, the courses they have taken, and the associated date for each course.

7.3 Awareness

Ensuring that all employees have a clear understanding of the Quality Policy, relevant Quality Objectives, their contribution to the quality management system, and the implications of not conforming to the quality management system is very important. Technical Services completes an introduction to ISO 9001: 2015, an introduction to the Technical Services Quality Management System, and an introduction to MP2 with all employees as they start work.

The only employees exempt from this are the work term student. Work Term students are typically hired for periods of 10 to 16 weeks and then move to a different employer in their next work term.

7.4 Communications

Communications play an important role in any organization, with internal and external communications being of equal value. For Technical Services, internal communications would encompass the movement of information throughout the department. External communications would encompass not only customers and suppliers, but also the various stakeholders throughout Memorial University.

Most internal communications throughout Technical Services is carried out on an informal basis as conversations between the individuals at various levels in the organization. There are a number of formal communications channels that have been established and these include management review, administrative meetings, and division/supervisors meetings.

The management review meeting is used to review the Quality Management System and is held on an annual basis. The specifics of the management review process are outlined in section 9.3 “Management Review”, of the Quality Manual.

The administrative meetings are used to discuss and review ongoing issues throughout the department. These are generally day-to-day operational issues, but also include issues related to the quality management system as they arise. This meeting will involve the Director, Manager of Finance, Administration and Quality Assurance, and the Division Managers. These meeting are generally held on a bi-weekly basis, with a minimum of 12 meetings per year. The minutes for these meetings are maintained by the executive secretary.

The division/supervisors meetings are held between the Division Manager and the Supervisors of the individual workshops in that division. These meeting are held to discuss current and upcoming issues in the division. These meetings are held on a monthly basis, with a minimum of 8 per year. The minutes for these meetings are to be maintained by the division manager.

External communications for Technical Services will encompass a wide variety of stakeholders. These include our customers, our suppliers, and the different departments and parties throughout Memorial University.

Our customers are comprised of people or organizations both internal and external to the university. Internal customers would be comprised of faculty, staff, and departments within, or affiliated with the university. External customers would be any person or organization contracting our services but having no direct affiliation with Memorial University.

Communication with our customers is maintained through a variety of media such as letters, e-mail, and telephone. Communications is maintained with the customer during the period of time a job is being completed and delivered. On some jobs communications with the customer will be maintained after the job is completed to ensure customer satisfaction.

7.5 Documented Information

Documented information or records play an important part in determining not only the operation of the quality management system, but also in the day-to-day operation of an organization. Documented information can be used for many purposes, such as determining the health of a process or procedure to capturing the various aspects of a job.

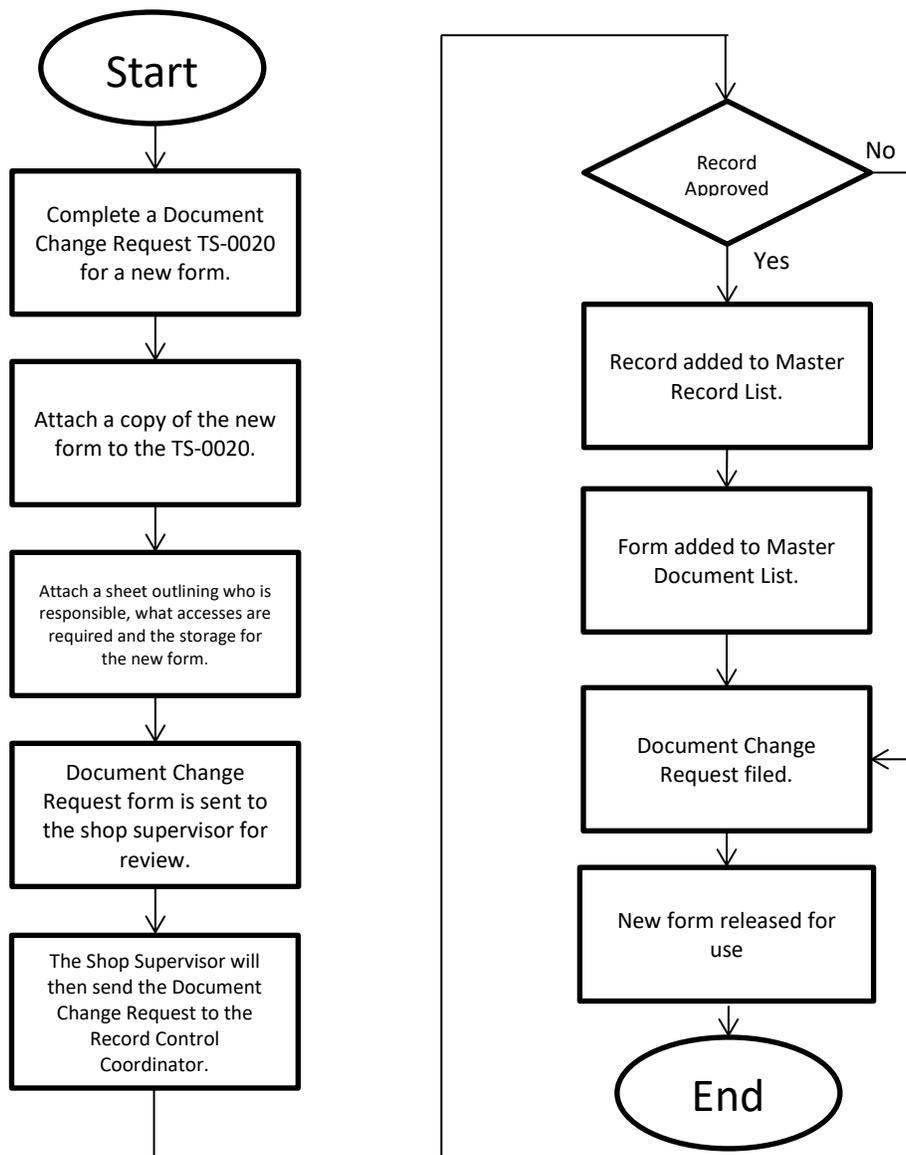
7.5.1 General

On a continual basis Technical Services will maintain documented information for the following areas:

1. Showing compliance to the ISO 9001:2015 International Standard.
2. Showing the effectiveness of the quality management system.
3. The complexity of our processes, their interactions, and their effectiveness.
4. The competence of the persons employed by Technical Services
5. Any relevant information required by our customers, suppliers, and stakeholders.

7.5.2 Creating and Updating

Documented Information Process



Input:

- A new or modified record, coming under the documented information process, which requires approval.

Process:

- Acquire and complete a Document Change Request TS-0020 for a new form.
- Attach a copy or edited version of the new form to the TS-0020.
- Attach a sheet outlining who is responsible, what accesses are required and the storage for the new form.
- Send the Document Change Request form to the shop supervisor for review.
- The Document Change Request form is then sent to the Record Control Coordinator by the shop supervisor.
- If the record is not approved, the document change request is filed.
- If the record is approved the record will then be added to the Master Record List.
- The approved document will then also be added to the Master Document list.
- The document change request is filed.
- The new form is then released for use.

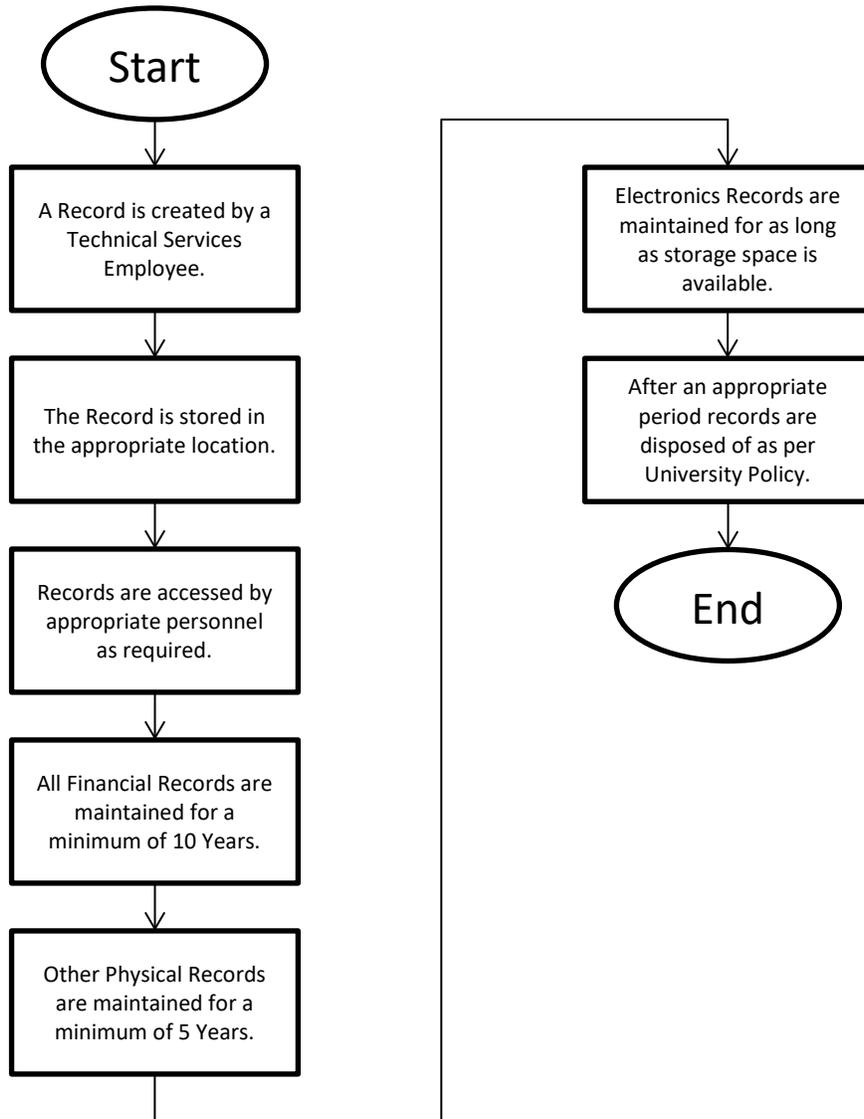
Output:

- A record that had been either specified as approved and ready for proper filing, or one that has not been approved; is properly marked and filed in its corresponding filing space.

Process Owner:

- The Quality Assurance Manager

7.5.3 Control of Documented Information



Input:

- A new record is created by a Technical Services employee.

Process:

- The record is created by the employee.
- The record is stored in the appropriate location for the record created.
- The record is available for access by the appropriate individuals.
- All Financial Records are maintained for a minimum of 10 Years.
- Other Physical Records are maintained for a minimum of 5 Years.
- Electronics Records are maintained for as long as storage space is available.
- After an appropriate period records are disposed of as per University Policy.

Output:

- A record that has been completed and appropriately stored.

Process Owner:

- The employee completing a record.
- Technical Services

8 Operation

8.1 Operational Planning and Control

Technical Services as an organization has evolved over the years. Our focus has been on the repair, fabrication, and design of equipment and services to support research, infrastructure, and administration of Memorial University. This has now been expanded to include the production of liquid nitrogen and liquid helium. This production comes under the Electronics Division.

The repair, fabrication, and design services come under the general Work Order process that we have established. As each individual work order is unique planning and control for each job is done accordingly. The work order process is also reviewed periodically to see if there are any improvements that can be initiated. Any changes would include an introduction to the Technical Services employees before implementation, and evaluating the effects of the change.

The production process for liquid nitrogen and liquid helium is outlined in a separate manual titled, "Technical Services Cryogenics Manual". This manual will outline all the processes, procedures, and records required for the operation of the cryogenics plant. The amount of liquid nitrogen or liquid helium dispensed is recorded on individual forms, one form per customer, with the information then entered into MP2 for monthly billing. Each form is to have a copy of a work order barcode label attached. This is used to connect the form to the individual customer on MP2.

Each customer must provide a Technical Services Work Request for product to be dispensed. The work request can cover a single dispensing or for multiple dispensing over a specified period of time. Customers such as local medical clinics will be considered External customers and billed accordingly.

The information generated in operating the cryogenic plant production process will be used for operational planning and control. If the data shows that there are possible improvements they will be investigated. Any changes to the process would include an introduction to the Cryogenics/Refrigeration employees before implementation, and evaluating the effects of the change.

8.2 Requirements for Products and Services

8.2.1 Customer Communication

Customer communications is very important for Technical Services in a dynamic environment such as Memorial University. With the different types of projects we undertake communication of requirements in both directions plays a big role. It has enabled researchers and facilities management to make required changes as jobs are in progress.

Along with this is the ever changing university community. This is seen in groups such as students, faculty and staff. The biggest challenge with this group is ensuring that new students, faculty and staff are aware of the products and services provided.

To ensure that new students, faculty, and staff are aware of the products and services offered by Technical Services we have implemented the following:

1. Pamphlets outlining the services offered in the various shops and departments.
2. Twitter feed outlining events and projects.
3. Inclusion in Undergraduate and Graduate student orientation packages.
4. Inclusion in faculty and staff orientation packages.
5. Invited tours for faculty and staff.

8.2.2 Determining the Requirements for Products and Services

When determining if Technical Services can provide a product or service for a customer there are a number of things to be checked. The list of items to be checked includes statutory, regulatory, and organizational requirements. Technical Services will also review the specifications required by the customer.

8.2.3 Review of the Requirements for Products and Services

As part of the process for accepting a job all applicable statutory, regulatory, and organizational requirements are reviewed. Along with this we review the requirements of the job requested. Upon conducting the review if we cannot meet the requirements, we will inform the customer and suggest alternatives that may be available.

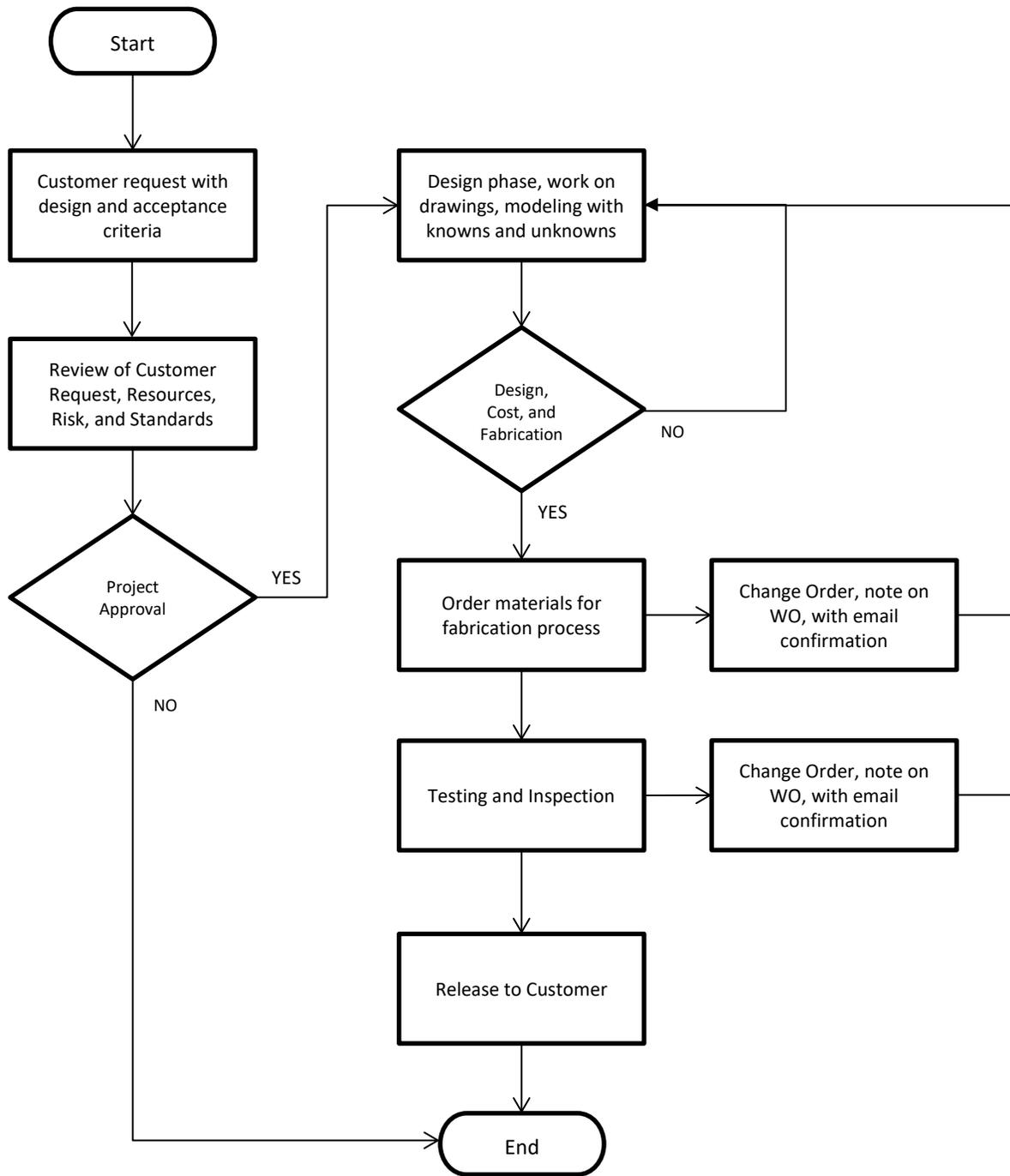
If jobs are reviewed and accepted, the documentation for the requirements will be part of the MP2 work Order or stored on the Projects Drive in the associated folder. If jobs are reviewed and rejected, all associated documentation is to be stored in an appropriate folder on the Technical Services server.

8.2.4 Changes to requirements for Products and Services

When Technical Services and a customer agree to changes in the requirements for a job the following shall occur:

1. All relevant documentation is updated to reflect the changes.
2. All personnel working on the job are informed of the changes and the new versions of documents to be followed.

8.3 Design and Development of Products and Services



Input:

A Work Requisition from a customer to undertake a design and development project. The request would include the design and acceptance requirements.

Process:

- Verify customer design and acceptance requirements as well as determine any statutory or regulatory requirements.
- Review the Customer design and acceptance requirements, Resources required for the project, Risks and Opportunities associated with the project, and all applicable Regulatory and Statutory requirements.
- Accept or Reject Project.
- Meeting with the customer to discuss and obtain approval on final design, cost estimate, and fabrication process.
- If “Not Approved” return to design phase. If “Approved” move to next step.
- Order the materials to start the fabrication process.
- Complete the testing and inspection of the product.
- If at any time there is a change to the design for any reason a Job Change Request must be completed, a note put on the MP2 work Order, and an email confirmation received from the customer.
- Release the final product to the customer.

Output:

- A completed product for the customer.
- A Work Requisition, Customer Requirements and Acceptance Criteria, MP2 Work Order, Drawings, Job Change Request, and Inspection Sheet.

Process Owners:

- Originating Shop Supervisor
- Technical Services
- Customer

Process Stakeholders:

- Technical Services Department
- Customers

8.4 Control of Externally Provided Processes, Products, and Services

8.4.1 General

Purchasing for Technical Services plays a vital role in providing quality products and services to our customers. The purchasing office plays many roles ranging from ensuring that purchase requests and orders are properly placed, the goods received meet the original orders placed, and ensuring that the vendors have received proper payment and paperwork. Throughout this process, it is integral that all pricing and relevant information is maintained in the MP2 and Banner systems as required.

The standard policies and guidelines followed by the Purchasing Office are outlined in the policies as set forth by Financial and Administrative Services of Memorial University. The requirements and approvals required for purchases are outlined in table 2.

Up to \$1000	Catalog price of item	Shop Supervisor
\$1001 to \$2500	Catalog price of item	Division Manager
\$2501 to \$10,000	3 formal price quotes and a Quotation Summary Log attached to the Purchase Order	Director, Manager Finance / Admin, Division Managers
>\$10,000	Public Tender	Director Manager Finance/Admin

Table 2: Purchasing Approval

The purchase of shop tools and equipment must be approved by the division manager regardless of the price.

The process to be followed for making purchases can be seen in appendix 3.

To ensure that Technical Services is receiving the best possible products and services, our suppliers are evaluated on an annual basis. These evaluations are performed by the Purchasing Office personnel using the Supplier Audit Form (TS-0037), with the results of these evaluations being used to develop a master list of preferred vendors. The form for this process is available on the Technical Services Documents and Forms webpage. Respective vendors and ratings are viewable on the MP2 system, enabling any employee entering Purchase Requisitions to see who the best vendors are. The completed Supplier Evaluation Forms will be maintained and available in the Purchasing Office.

In the case of specialty items or capital equipment purchases Technical Services may have to use vendors that have not been evaluated.

8.4.2 Type and Extent of Control

To ensure the best possible product for our customers, Technical Services has all parts and materials ordered shipped to our shops before delivery to our customers. This is done to ensure that the correct parts or materials have arrived and that they meet the specifications outlined in the original purchase request.

8.4.3 Information for External Providers

To ensure the adequacy of requirements being provided to external suppliers, each purchase requisition is checked at various levels of the process. The shop supervisor will check the purchase requisition for accuracy of product information before sending it on for approval. The person approving the purchase requisition will again check the requisition for accuracy of product information as well as financial information. The purchase requisition is finally checked by the purchasing supervisor for financial information before being sent to the purchasing agent for processing.

8.5 Production and Service Provision

8.5.1 Control of Production and Service Provision

As we have seen in section 8.1, the production process for liquid nitrogen and liquid helium is outlined in the manual “Technical Services Cryogenics Manual”. The characteristics of the products produced are specified on the Material Safety Data Sheets TS-0100 Liquid Nitrogen and TS-0101 Liquid Helium.

The monitoring and measuring devices used to monitor and control the processes involved are outlined in section 8.1. These processes also ensure that the infrastructure and environment are suitable for production and worker safety.

To produce liquid nitrogen and liquid helium we use a purpose build cryogenics plant. The cryogenics plant is housed in a secured facility with limited access. The facility is also monitored for the safety of the employees directly working in the cryogenic plant, and the surrounding building as well. These safety monitors will remotely notify Technical Services and Campus Enforcement Patrol of any unsafe conditions.

Due to the nature of the products and the equipment used, we require anyone working in the cryogenics plant to have appropriate training. Staff responsible for dispensing cryogenic material will receive training on daily plant operation and dispensing of product. Staff operating the cryogenics plant will also receive appropriate company training on repair and maintenance of the equipment.

8.5.2 Identification and Traceability

Identification and traceability for Technical Services will depend on the type of job being performed. The method used to identify any parts and materials used will depend on whether the job is a repair or a project.

As with any organization doing repair work, a supply of general parts and materials is maintained to provide a quality service for our customers. These parts and materials are ordered through our purchasing office and recorded on the MP2 system. As these parts and materials are used on a job they are recorded on the MP2 work order for the job. All parts and materials in general supply are assumed to be utility grade and treated as such.

For any job, that requires parts or materials not readily available; the items are ordered using the MP2 purchasing system. When the employee places the purchase requisition on MP2, they will specify which work order the items are for. MP2 will then link the purchase order for these parts or materials to the work order record. As these parts and materials come into the shop, a label with the work order number is printed and attached. These labels are to remain with the parts and materials throughout the job. If a label becomes damaged or removed for any reason, the employee will ensure a new label is attached.

If there are any excess parts or materials after the job has been completed, they will be added to the general shop supply or disposed of, depending on the quantity and quality of the materials remaining.

Identification of products produced as part of a project will also be very important. This will allow Technical Services to easily identify a particular project and any information concerning the project. This information will also include the parts and materials used and the purchase information.

To identify the parts used in a project, the product will be divided into an assembly and any associated sub-assemblies. The assembly will be the overall finished product for the project while the sub-assemblies will consist of any parts, materials or software required to construct the assembly.

Identification of the assembly will be done through the use of the work order number for the project. This information, where possible, will be attached to the assembly in a permanent manner before delivery to the customer.

All parts and materials used in creating any sub-assemblies will be recorded in a detailed parts list. This parts list will be recorded and kept as part of the documentation for the project. Where applicable, the individual components will be identified on any drawings for the assemblies and referenced to the parts list. As any sub-assemblies move through the project lifecycle, they will be identified by an attached work order number label.

All information pertaining to a finished product will be available on the projects folder of the division documents server. This information for each project will be accessible by the model or work order number.

8.5.3 Property belonging to customers or external providers

Materials are occasionally provided by our customers. For most fabrication projects, the materials provided are usually in their raw state and can be anything from gases and liquids to solid materials in any shape or size. To ensure the safety of the people working in the shops, any materials coming into a shop must be in an appropriate container for the material and be clearly labelled with the contents. Any hazardous materials should also have an MSDS sheet attached.

A record of the materials and/or equipment entering a shop will be maintained. To accomplish this any items entering a shop for repair is recorded on the MP2 work order. If there is a raw material of any kind, the Shop Supervisor will record the information on the Incoming Materials Form TS-0091. If the

supplied material is indicated to be of a specific type, the item must be validated before it is used. A Work Order barcode label is to be attached to any supplied items.

During the work process, the shop will provide a safe area for any materials and/or equipment provided to be stored.

If there is any material remaining after the job has been completed, it is to be returned to the customer. If the customer does not want the excess material to be returned, the material will be added to the shop general supply or be disposed of appropriately. Any hazardous materials will be returned to the customer. A record of this is to be kept on the Incoming Materials Form, TS-0091. The TS-0091 form is to be scanned into a PDF document, and stored in the appropriate folder on the Projects Drive.

The Work Order barcode label is to remain on any material and/or equipment being returned to the customer.

The only exception to the above process is for the Computer Shop, where they will be using document number TS-0092. The reason for this is the nature of the equipment that they service and repair.

8.5.4 Preservation

Once a new piece of equipment has been fabricated or a repair has been completed, ensuring nothing happens to the equipment before delivery plays a large part in customer satisfaction. To ensure that items waiting for delivery are kept as safe as possible. The equipment will be moved to an appropriately sized area of the shop. The equipment will stay in this area until final delivery occurs.

8.5.5 Post – Delivery Activities

Due to the nature of the services we provide to customers throughout Memorial University post – delivery activities will depend on the nature of the job being performed. The post – delivery activities could range from the customer picking up a piece of equipment that has been repaired or fabricated, to Technical Services personnel installing and in-servicing the customer on the operation and care of the equipment. Once the item has been picked up or delivered the shop doing the job will give the customer a Handout Survey.

The only items that fall outside of this are the liquid nitrogen and liquid helium produced in the cryogenics plant. In this instance, the customer takes position of the product in the waiting area of the cryogenics plant. The customer is then responsible for the transportation of the product to the final destination.

8.5.6 Control of Change

When Technical Services and a customer agree to changes in the requirements for a job the following shall occur:

1. All relevant documentation is updated to reflect the changes.
2. All personnel working on the job are informed of the changes and the new versions of documents to be followed.

8.6 Release of Products and Services

Ensuring that all requirements have been met will play a big part in customer satisfaction. As we fabricate parts and equipment, conduct repairs, or provide services ensuring everything is ready for release is important.

When we fabricate a part or piece of equipment inspections are completed to ensure they meet established requirements. Before a fabricated item can be released, the person releasing the item must ensure that all inspections have been completed. For equipment that has been repaired the person releasing the equipment must ensure that the results of physical and operational inspections have been noted on the MP2 work order. Finally, for services being provided, any personnel, materials and resources required are ready. A note of this is to be entered on the MP2 work order.

Once all the requirements have been met the item or service is able to be released. The name of person releasing the item or service to the customer is to be noted on the MP2 work order.

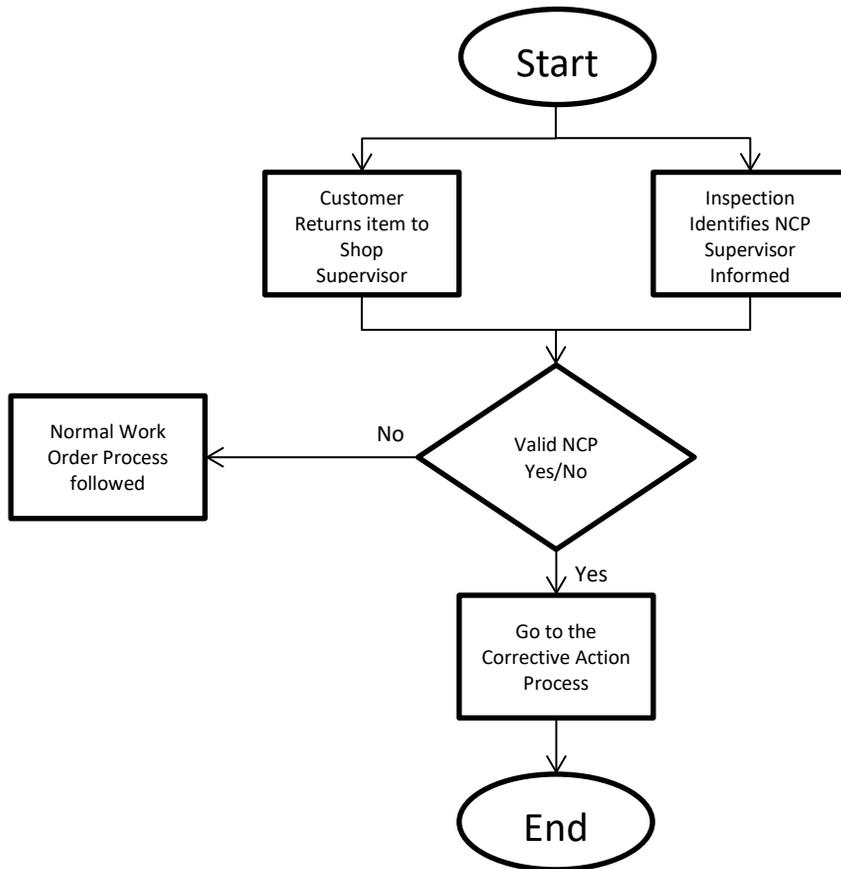
8.7 Control of Non-Conforming Product

Due to the nature of the services we provide to different customers throughout Memorial University non-conforming product can be identified either in the work shop or by customer after delivery has occurred. If fabricating parts for a job these non-conforming parts would be identified when inspected as part of the work process.

If the part for a job is supplied by an outside vendor and used to repair a piece of equipment, the issue may not occur until after the equipment has been tested and returned to the customer. Here the customer would identify the issue and return the equipment for repair.

To cover these possible situations, the following process has been implemented.

Non-Conforming Product Process



Input:

- An item identified as a nonconforming product.

Process:

- Determine if this is a valid nonconforming product.
- If it is not a valid nonconforming product, proceed with the normal work order process.
- If it is a valid non-conforming product go to the Corrective Action Process.

Output:

- A completed closed TS-0022 form and a nonconforming product issue that has had a long term solution implemented and verified.

Process Owners:

- Division Manager
- Quality Assurance Manager
- Technical Services
- Customer

Process Stakeholders:

- Technical Services Department
- Customers

9 Performance Evaluation

9.1 Monitoring, Measurement, Analysis, and Evaluation

9.1.1 General

Monitoring, measurement, analysis, and evaluation of the Technical Services quality management system is accomplished through a system of client surveys and by examining returned non-conforming product. The results of these processes are used in conjunction with our Internal Auditing process. This allows us to evaluate our internal processes to ensure proper operation and adherence to the Quality Management System.

These monitoring and measurement tools are then analyzed and evaluated during our Administrative Meetings and Management Review.

9.1.2 Customer Satisfaction

While being one of the more challenging parameters to measure in a Quality Management System, Customer Satisfaction is one of the most important. At Technical Services, we will use two separate methods of measurement to gauge the customer satisfaction with the department.

The first method of measurement will be a monthly telephone survey of a random sample of customers. The random sample will consist of the highest price work order for each shop that has been completed and billed during that month. The telephone survey questionnaire is document TS-0029.

The second method of measurement will be the handout customer satisfaction survey. These surveys are to be distributed to the customer when their job is completed and the equipment or service has been delivered. The handout survey questionnaire is document number TS-0030.

On an ongoing basis, the Computer Shop performs repair and warranty services for a number of outside companies on a contractual basis. Some of these companies will do customer satisfaction measurement of the services provided by Technical Services to their respective customers. These companies provide the results of these measurements to Technical Services. These results will also be used in measuring the customer satisfaction of the Computer Shop and the department.

Our overall goal is to have a customer satisfaction level greater than 90% for the department and for each workshop in the department. The data resulting from the customer satisfaction measurements will be analyzed to see where improvements to the department, workshops, and the quality system can be achieved.

9.1.3 Analysis and Evaluation

As the data is gathered from monitoring and measuring our customer satisfaction and processes it is compiled and analysed. The analysis is performed looking for areas where we excel as well as areas where we can improve.

The results of the analysis are presented on quarterly bases during our administrative meetings. The overall annual results are presented at the Management Review meeting. Any required actions can be generated from either of these meetings.

9.2 Internal Audit

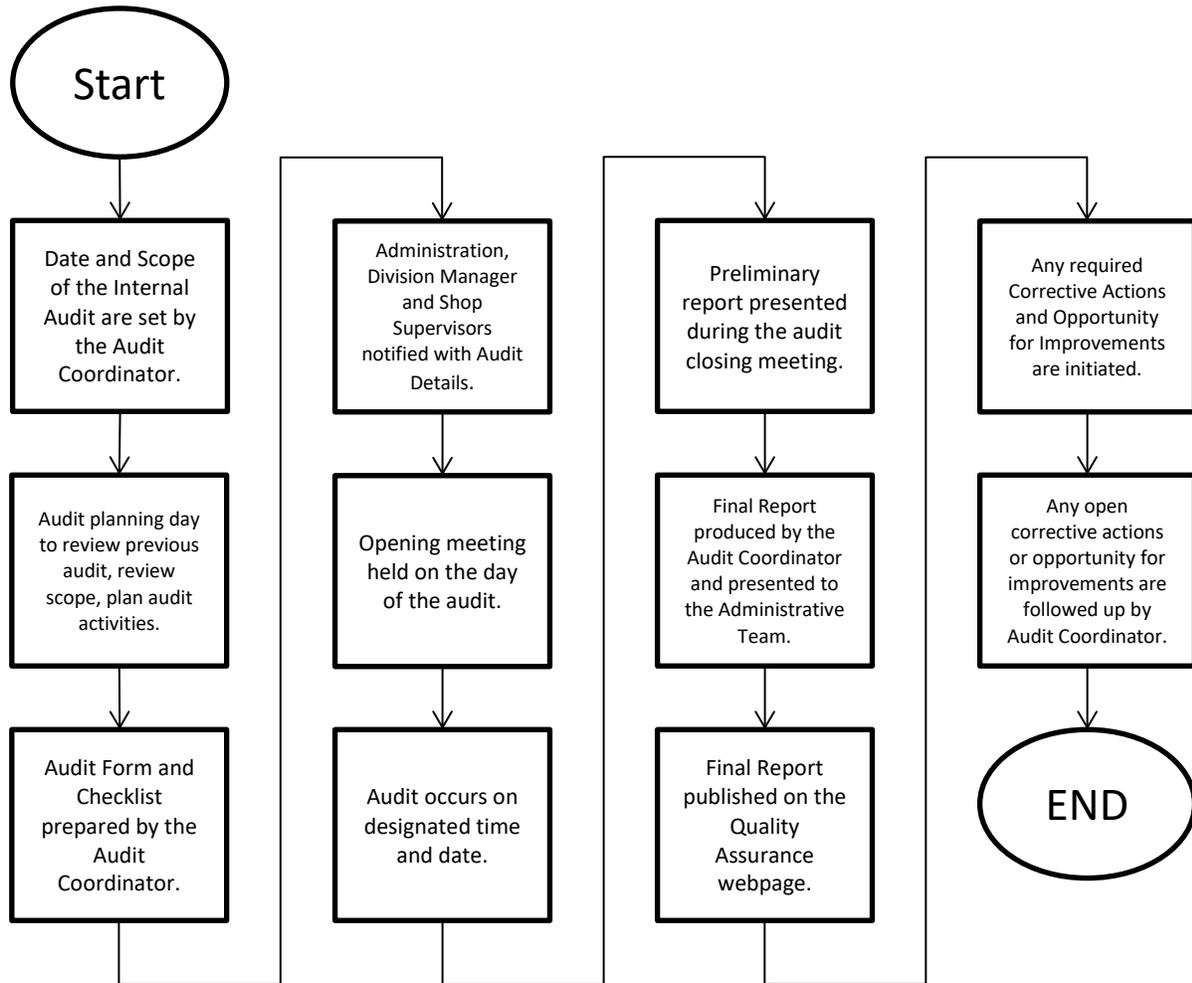
The Internal Audit Process is one of our most important. This process will describe how we will audit ourselves to ensure compliance with our quality management system and the ISO 9001:2015 standard.

As part of their mandate, the Quality Assurance manager will be responsible for the Internal Audit Process. This will include all aspects of the process, from developing the annual audit scope and schedules, conducting the audits, to following-up on any opportunities for improvement or non-conformities arising from the audit.

To assist with this process, Technical Services has established an internal audit team. The team is comprised of members from the electronics division, mechanical division, administrative offices, and the internal audit coordinator. The audit coordinator roll is performed by the Quality Assurance manager.

This blend of personnel ensures an internal auditor does not examine their own unit. The audit coordinator may also conduct audits if required.

Internal Audit Process



Inputs:

- Annual internal audit plan developed by the audit coordinator

Process:

- Schedule date and scope of an upcoming internal audit according to the annual internal audit plan developed by the audit coordinator.
- Conduct an audit planning day to review previous audits, scopes, and findings. Plan the audit activities and questions for the upcoming audit.
- The audit form TS-0039 is started by the audit coordinator and the audit checklists TS-0040 are prepared.
- The administration, division managers and shop supervisors are informed of the upcoming audit. This includes the date and scope of the audit.
- On the designated audit date,
 - An opening meeting is held to confirm the agenda for the day and answer any relevant questions.
 - The audits are held in the shops with a person selected on the day of the audit.
 - Audit coordinator and auditors prepare the preliminary report.
 - A closing meeting is held to present the preliminary report and to answer any questions.
- The final report is prepared by the audit coordinator and presented to the administrative team.
- The final report is published on the Quality Assurance webpage.
- Any corrective actions or opportunities for improvement are initiated and followed up by the audit coordinator.

Outputs:

- A completed internal audit with corrective actions and opportunities for improvement identified.

Process Owner:

- Audit Coordinator

Stakeholders:

- Audit Team
- Administrative Team
- Technical Services Employees

9.3 Management Review

9.3.1 General

To ensure the continual improvement of the Quality Management System, Technical Services has established a continual process of reviewing ongoing issues in the department.

As part of our normal management operations, an Administrative Meeting for all managers is scheduled to discuss current issues throughout the department. A permanent agenda item for these meetings is the Quality Management System. Here quality issues are discussed and any necessary actions are developed and implemented. Minutes for these meetings are produced and maintained by the administrative office.

Also, on an annual basis Technical Services will have a formal Management Review meeting. At this meeting a presentation is made outlining the overall progress of the quality management system. From an analysis of this data any necessary actions are developed and implemented.

9.3.2 Management Review Inputs

The input for the management review meeting is a presentation by the Quality Assurance Manager covering the following areas:

- The status of any open corrective actions or opportunities for improvement.
- Any changes to internal or external issues that may affect the quality management system.
- Provide information on the performance and effectiveness of the quality management system.
 - Customer satisfaction (handout and telephone surveys)
 - Extent to which quality objectives have been met
 - Non-conforming Product and Corrective Actions
 - Monitoring and measurement results
 - Internal audit results
 - Performance of external providers
- The adequacy of resources.
- The effectiveness of actions taken to address risks and opportunities.
- Any opportunities for improvement.

9.3.3 Management Review Outputs

The output from the management review is a list of action items arising from the discussion. This list will contain the action item, the person who is responsible for the action item, the target date for completion of the action item, and a target date for the confirmation that the action item has been resolved.

The list of action items will be compiled and maintained by the Director's secretary.

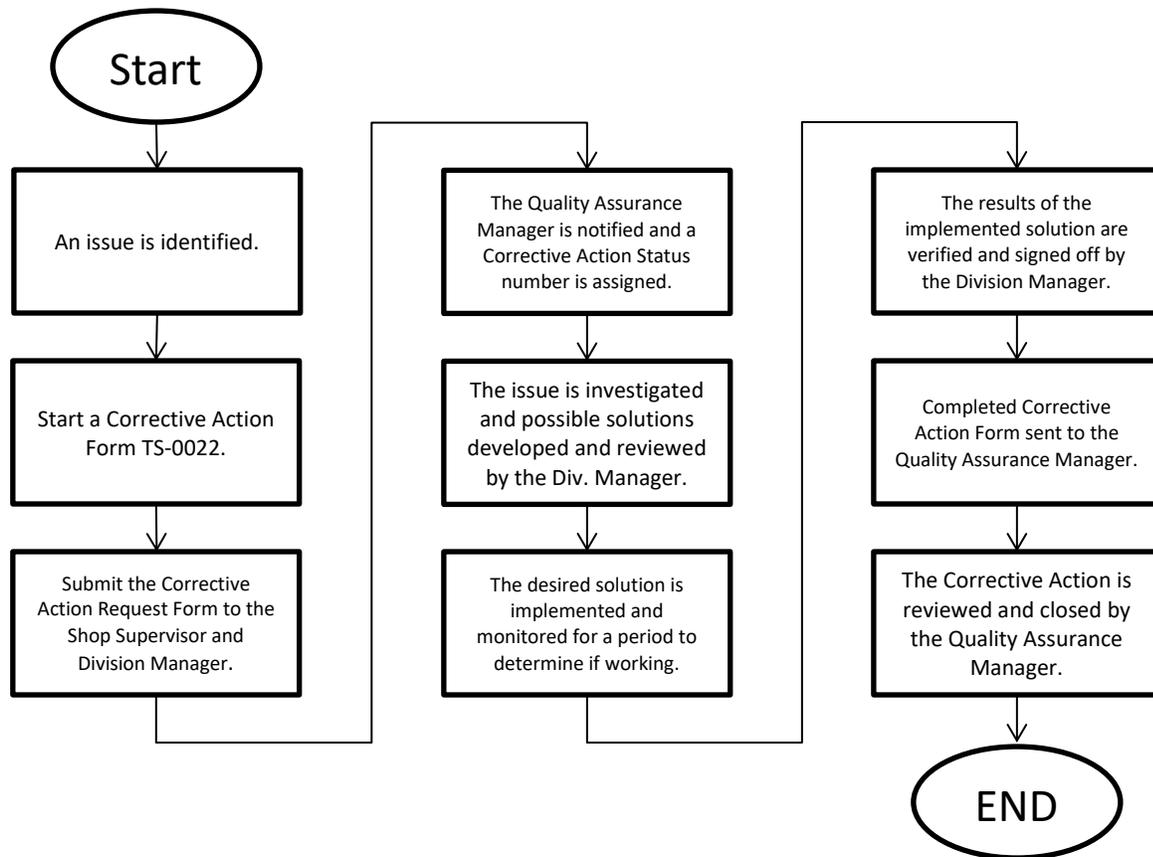
10 Improvement

10.1 General

A Corrective Action is the steps taken to correct an identified issue, and prevent it from reoccurring. The identified issue can be either small or large, but they must all be treated the same. To ensure that all issues are treated equally, no matter the severity, a process has been established, outlining the steps to be followed when dealing with a corrective action. Identifying a corrective actions can occur in any number of ways either during an internal or external audit, through an identified opportunity for improvement, through a non-conforming product, or through a recorded non-conformance. All corrective actions are initiated using the Corrective Action Form TS-0022.

10.2 Non-conformity and Corrective Action

Corrective Action Process



Inputs:

- An identified non-conformance, opportunity for improvement, or non-conforming product, and a TS-0022 Corrective Action Form.

Process:

- A non-conformance, opportunity for improvement, or non-conforming product has been identified and a TS-0022 Corrective Action form has been initiated, and submitted to the Shop Supervisor and the Division Manager.
- The Quality Assurance Manager is notified and a corrective action status number is assigned.
- A root cause analysis is performed to discover the underlying causes for the issue.
- A series of solutions are developed and analyzed to determine which one best resolves the issue at hand and are to be reviewed by the division manager.
- The desired solution is implemented and monitored for an appropriate period of time to determine if this is the required solution.
- Once the final solution for the issue has been implemented, the results of the implemented solution are verified by the Division Manager, and, the Corrective Action form is signed by the Division Manager.
- The Corrective Action form is sent to the Quality Assurance Manager.
- The Corrective Action is reviewed and closed by the Quality Assurance Manager.

Outputs:

- A successfully completed corrective action and the accompanying TS-0022 form.

Process Owner:

- Employee Identifying the issue
- Division Manager
- Quality Assurance Manager

Stakeholders:

- Administrative Team
- Technical Services Employees

10.3 Continual Improvement

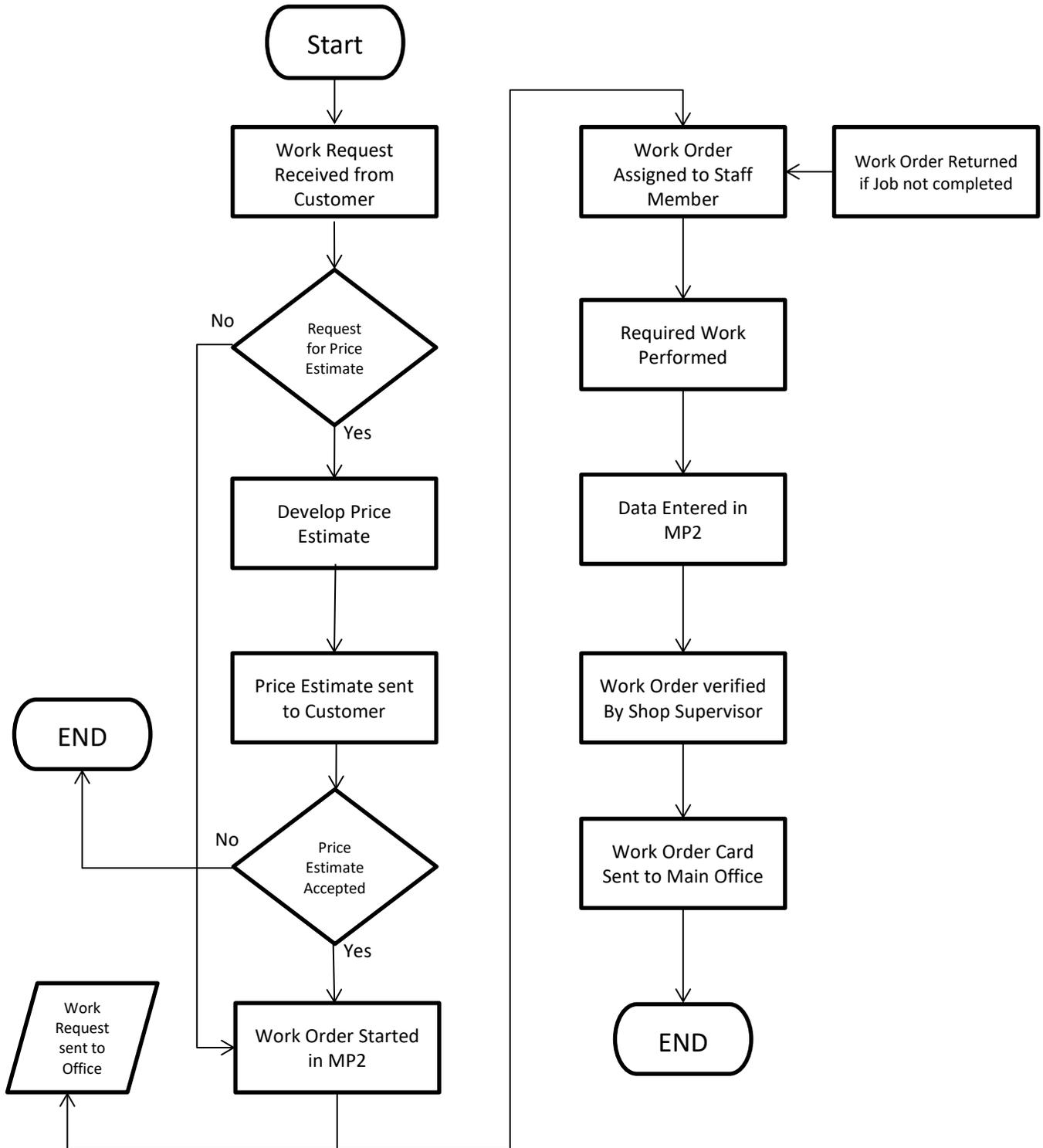
Technical Services, through the use of the ISO 9001:2015 standard is embracing the practice of continual improvement. This gives us the ability to control our processes using a quality management system. This goal is achieved by applying the three main components of a Quality Management System; quality control, quality assurance, and quality improvement, not only to the products and services produced, but also to our business processes.

This continual improvement will be achieved by analyzing and evaluating the results of our management review meeting and the administrative meetings. These outputs will be used to determine if there are any opportunities for improvement that can be addresses as part of continual improvement.

A Corrective Action is the steps taken to correct an identified issue, and prevent it from reoccurring. The identified issue can be either small or large, but they must all be treated the same. To ensure that all issues are treated equally, no matter the severity, a process has established outlining the steps to be followed when dealing with a corrective action. Identifying corrective actions can occur in any number of ways either during an internal or external audit, through an identified opportunity for improvement, through a non-conforming product, or through a recorded non-conformance. All corrective actions are initiated using the Corrective Action Form TS-0022.

Appendix 1:

Work Order Flow



Input:

- Work Request from a customer.

Process Steps:

- Work Request received from customer.
- Has a Price Estimate been requested by the customer.
- If YES, develop the Price Estimate and forward it to the customer, await approval from customer.
- Work Order started in MP2 and the Work Request is sent to the office.
- The Work Order is assigned to a staff member and work is performed.
- All relevant data is entered in MP2.
- Shop Supervisor verifies data on MP2 every month.
- On the Second Friday of month, all open work orders are sent to office for billing purposes.
- All uncompleted Work Orders are returned to their respective shops.
- All completed Work Orders are closed and filed.

Output:

- Verified information on MP2 required for billing purposes.

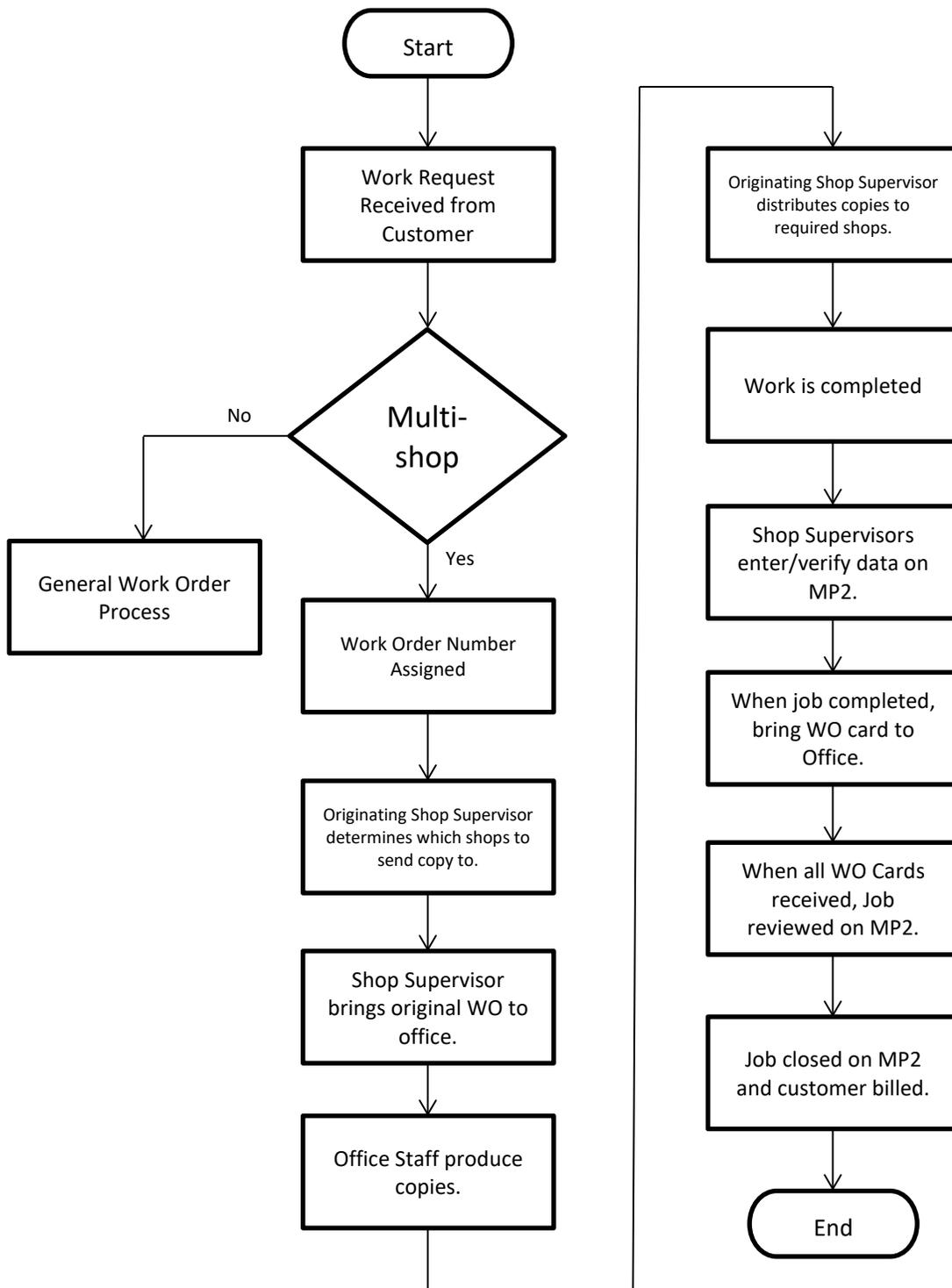
Process Owner:

- Shop Supervisor who receives the original Work Request.

Process Stakeholders:

- All Technical Services staff
- The customer

Multi-shop Work Order



Input:

- Work Request from a customer that requires work to be performed in two or more shops.

Process Steps:

- Work Request received from customer.
- Is this a Multi-Shop job? If NO go to the General Work Order Process.
- Work Order started on MP2 and Work Order Number assigned.
- Originating Shop Supervisor determines which shops are required to perform the job.
- Shop Supervisor brings the original Work Order to the Office.
- The Office Staff produces the copies of the Work Order.
- The originating Shop Supervisor distributes the copies to the required shops.
- The work is completed by each shop.
- The Shop Supervisors enter the required data into MP2.
- As each shop completes its work the Work Order Card is sent to the Office.
- When all the copies have been received in the Office, the job is reviewed on MP2.
- The job is closed on MP2 and the customer is billed.

Output:

- A completed multi-shop job.
- The original and all copies of the work order cards used in a multi-shop job.

Process Owner:

- Shop Supervisor who receives the original Work Request.

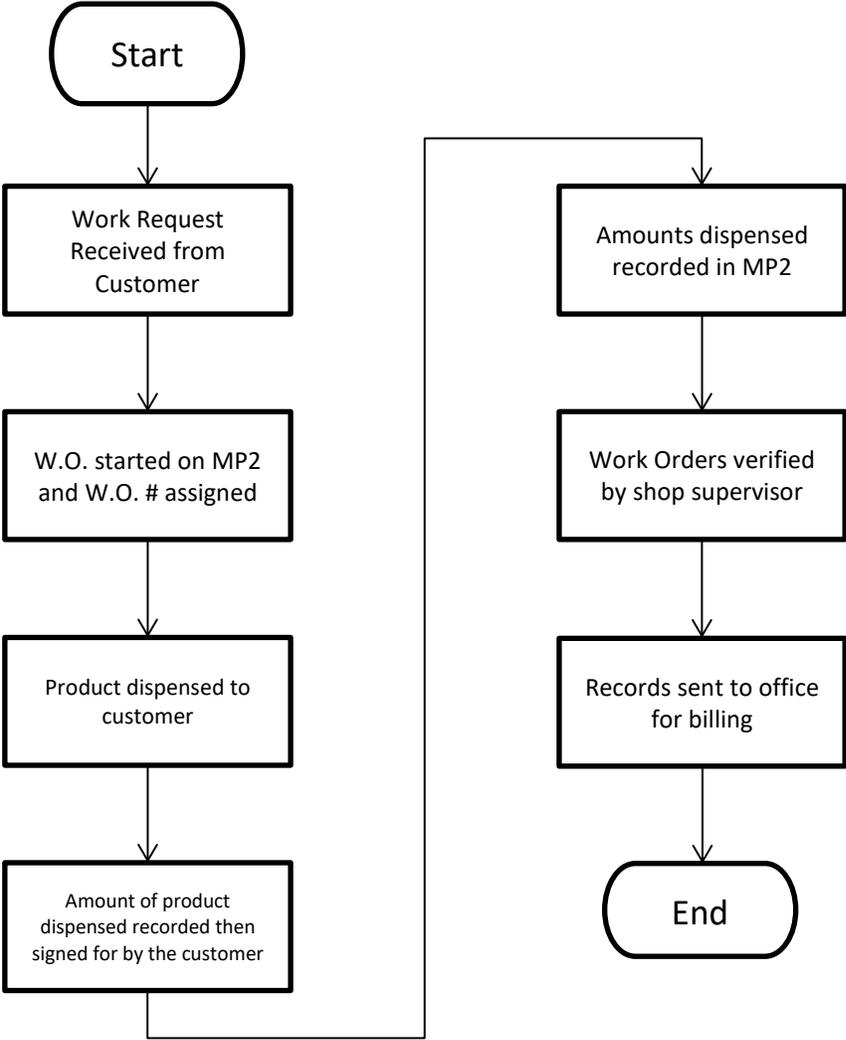
Process Stakeholders:

- All shop supervisors participating in the specific job.
- The customer
- Administrative staff

Note:

- Red Ink used to indicate Multi-Shop Work Orders
- The original work order stays with the original shop.
- All jobs involving 2 or more shops require multi-shop copies to be produced.

Cryogenics Work Order



Input:

- Work Request from a customer for dispensing of Liquid Nitrogen or Liquid Helium.

Process Steps:

- Work Request received from customer.
- Work Order started on MP2.
- Product dispensed to customer.
- The amount and type of product dispensed is recorded and signed for by the customer.
- Information is recorded in MP2.
- MP2 work orders are verified by the shop supervisor monthly.
- On the Second Friday of month, all records are sent to office for billing purposes.

Output:

- Verified information on MP2 required for billing purposes.

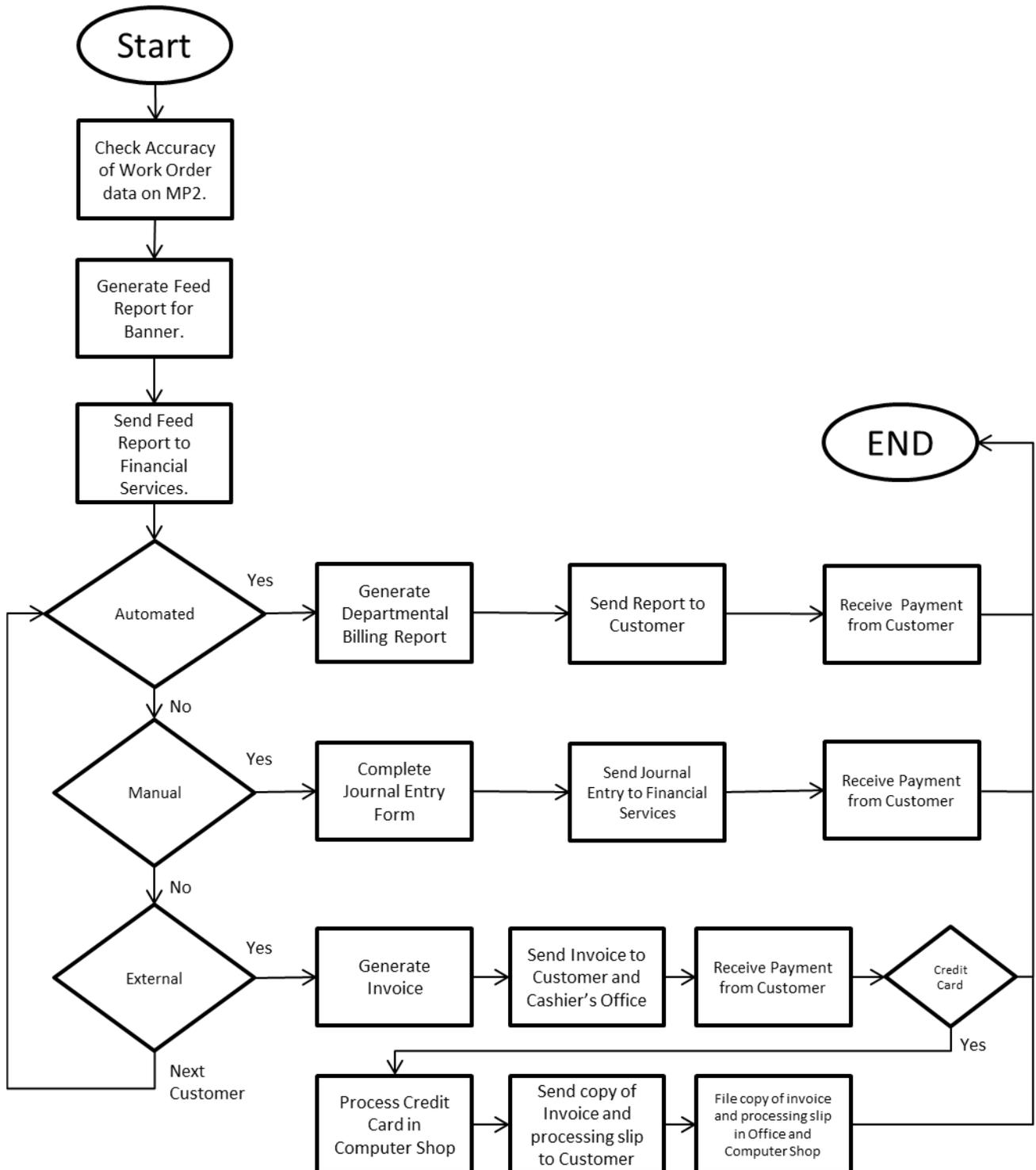
Process Owner:

- Shop Supervisor.

Process Stakeholders:

- Refrigeration supervisor and personnel.
- The customer
- Administrative staff

Billing Process



Input:

- Accurate work order data on MP2.

Process:

- Check the accuracy of the work order data on MP2.
- Generate the Feed Report for Banner.
- Send the Feed Report to Financial Services for processing.
- If it is an automated transaction, generate Departmental Billing Report and send it to the customer.
- If it is a manual transaction, complete a journal entry form and send it to financial services.
- If it is an external customer, generate an invoice and send it to the customer and Cashier's Office.
- Receive payment from the respective customer.
- If the customer is paying by Credit Card.
 - ❖ Credit Card information is to be forwarded directly to the department Secretary or Manager of Finance, Administration and Quality Assurance.
 - ❖ They will take the information to the Computer Shop where it will be processed through the Moneris Machine.
 - ❖ A copy of the invoice and attached processing slip will be sent to the customer.
 - ❖ The copy of the invoice and the processing slip will be filed in the Office and Computer Shop.
- Repeat the process until all customers have been billed appropriately.

Output:

- The output for this process is each customer has been appropriately billed and payment is received for work performed.

Process Owner:

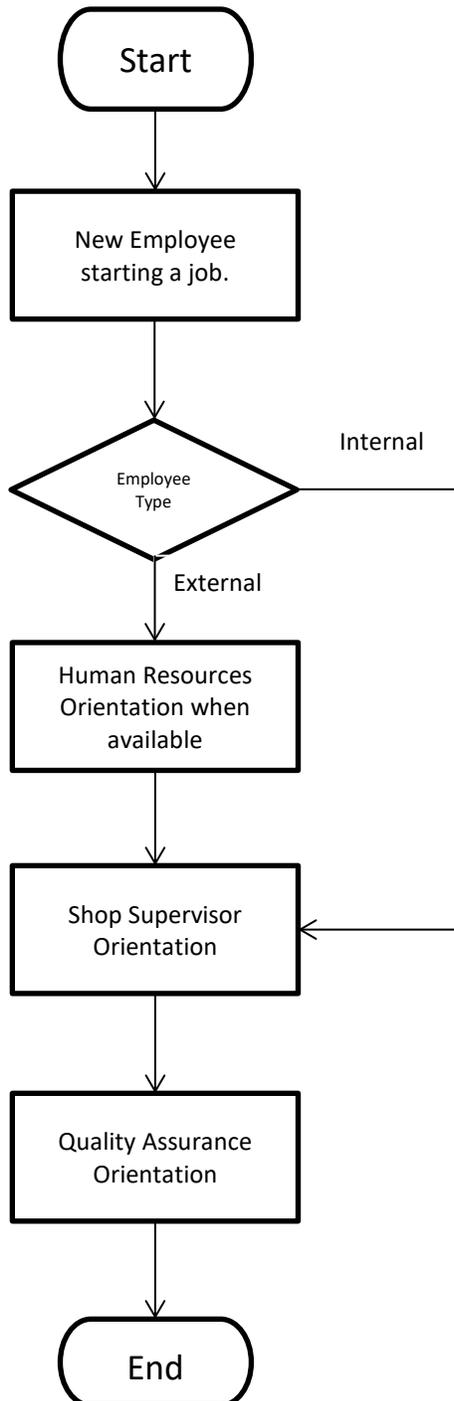
- Office Staff

Process Stakeholders:

- Technical Services Department
- Financial Services Department
- Customers

Appendix 2:

New Employee Orientation



Input:

- A new employee starting work with Technical Services.

Process:

- If the new employee is coming from outside the university, or external, they must complete the Human Resources employee orientation seminar at the first available session.
- The employee is oriented to their work shop by the shop supervisor. This includes orientation to the processes relevant to the shop and the daily operation of the shop.
- The employee is oriented to the quality management system by the Quality Assurance office.

Output:

- An employee that has been oriented to both Memorial University and Technical Services.

Process Owner:

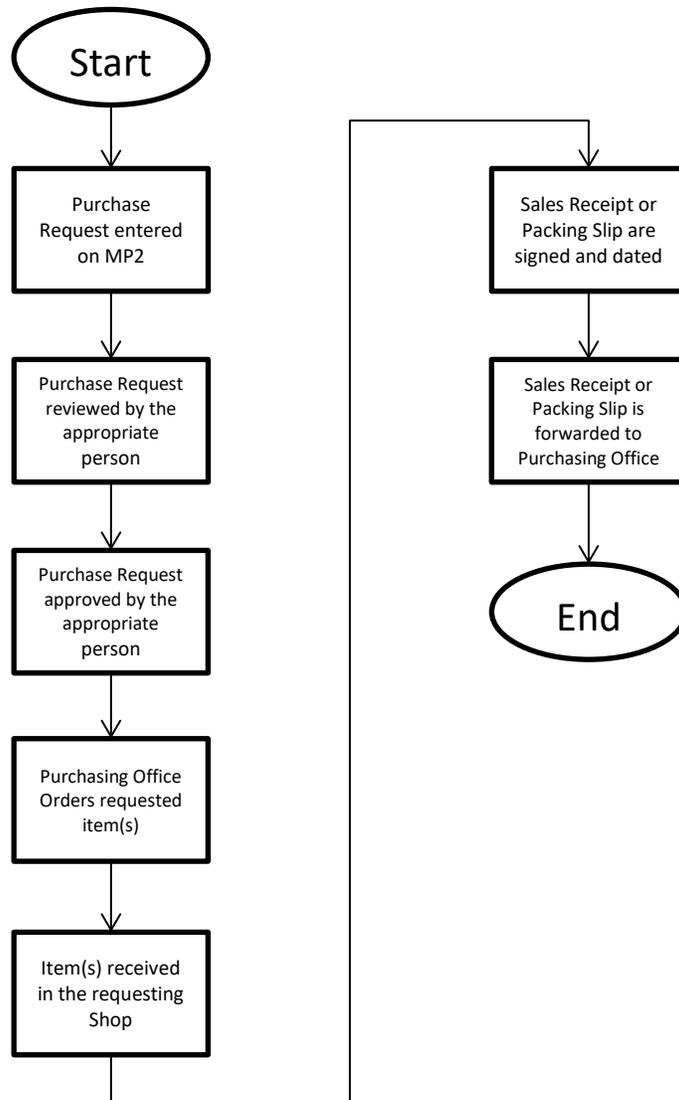
- New Employee
- Shop Supervisors
- Finance/Administration/Quality Assurance Manager

Process Stakeholders:

- New Employee
- Technical Services Department

Appendix 3:

Shop Purchasing Process



Input:

- A Purchase Requisition entered on MP2

Process:

- A purchase requisition is entered on MP2.
- The purchase requisition is reviewed by the appropriate person.
- The purchase requisition is approved by the appropriate person.
- The Purchasing Office orders the item(s) requested.
- The item(s) requested are received in the requesting shop.
- The Sales Receipt or Packing Slip is signed and dated by the person receiving the item(s).
- The Sales Receipt or Packing Slip is forwarded by the person receiving the item(s) to the purchasing office.

Output:

- The product(s) or service(s) required by the person entering the purchase request.

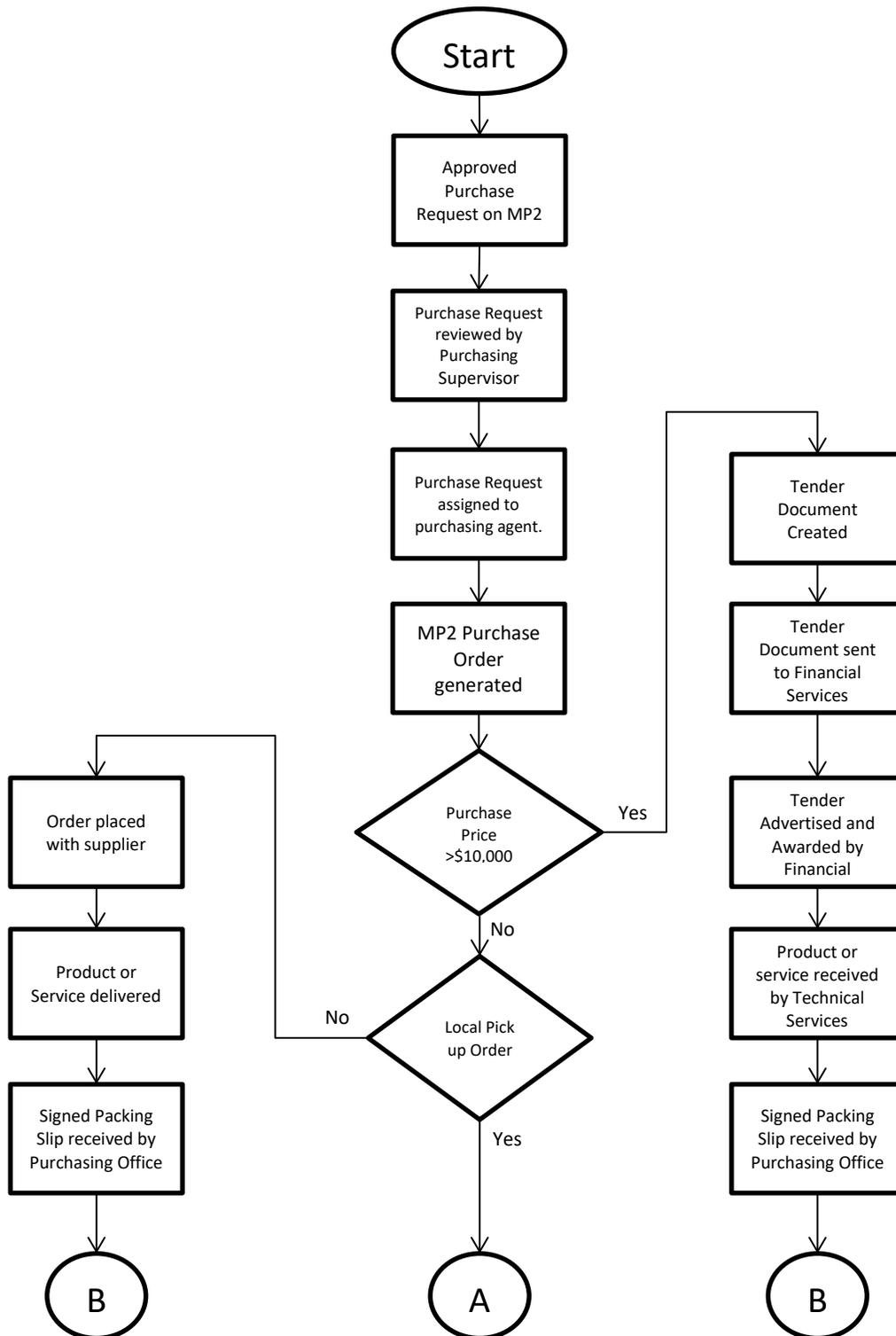
Process Owners:

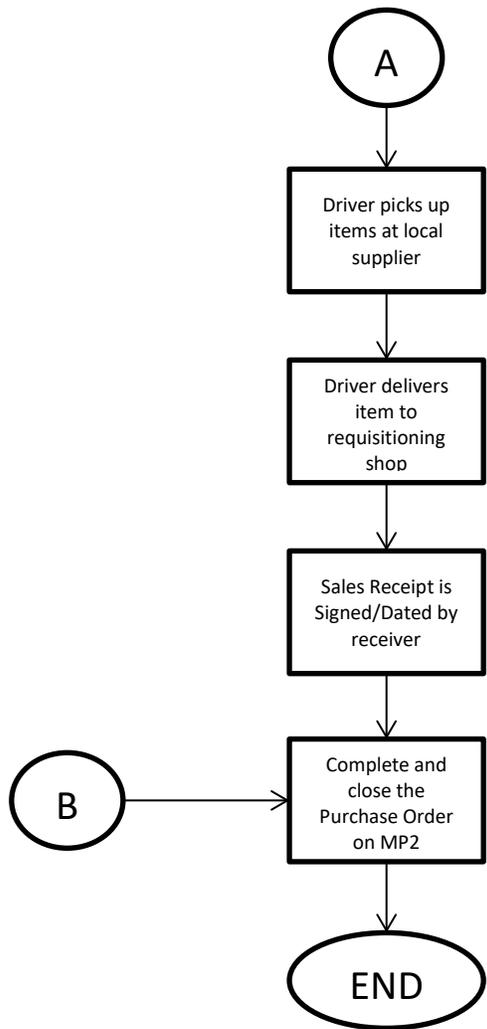
- Employee purchasing a product or service.
- Person approving the purchase request.
- Purchasing Office

Process Stakeholders:

- Technical Services Department
- Financial Services Department
- Customers

Purchasing Office Process





Input:

- An approved Purchase Request on MP2

Process:

- A purchase request is approved on MP2 by the appropriate person.
- The purchase request is reviewed by the purchasing supervisor.
- The purchasing request is assigned to a purchasing agent.
- A purchase order is generated on MP2.
- If the purchase is greater than \$10,000 the Public Tendering Act must be followed:
 - A tender document is created and sent to Financial Services.
 - The tender is advertised and awarded by Financial Services.
 - The product or service is received in the requesting shop.
 - The person receiving the item(s) signs and dates the packing slip then forwards it to the purchasing office.
- If the item(s) requested cannot be picked up locally:
 - The purchasing agent places the order with the supplier.
 - The item(s) are received by the requesting shop.
 - The person receiving the item(s) signs and dates the packing slip then forwards it to the purchasing office.
- If the item(s) requested can be picked up locally:
 - The purchasing agent purchases the required item(s) at the local supplier.
 - The purchasing agent delivers the item(s) to the requesting shop.
 - The person receiving the item signs and dates the Sales Receipt.
- The purchase order on MP2 is completed and closed.
- Appropriate paper and electronic records are filed and maintained.

Output:

- The product(s) or service(s) required by the person entering the purchase request.

Process Owners:

- Purchasing Office

Process Stakeholders:

- Technical Services Department
- Financial Services Department
- Customers