KANA OILFIELD SERVICES LTD.

PO Box 808, 4107 – 41st Street
Whitecourt AB T7S 1N8

SECTION A TITLE PAGE

QUALITY SYSTEM MANUAL

FOR THE

CONSTRUCTION, REPAIR AND ALTERATION OF PRESSURE PIPING PER ASME B31.1
POWER PIPING
AND ASME B31.3 PROCESS PIPING

REPAIR AND ALTERATION OF BOILERS AND PRESSURE VESSELS

IN ACCORDANCE WITH
THE ALBERTA SAFETY CODES ACT AND REGULATIONS

BY

KANA OILFIELD SERVICES LTD.

AT

4107 – 41st STREET
WHITECOURT, ALBERTA
AND AT FIELD SITES CONTROLLED FROM THE ABOVE LOCATION

MANUAL NUMBER: 22

REGISTRATION NO. AQP-2167

ASSIGNED TO: Uncontrolled Copy

Alberta
MUNICIPAL AFFAIRS

ABSA
the pressure equipment safety authority

Certificate of Authorization Permit

Quality Management System

Expiry Date: **April 24, 2009** Reg. No.: **AQP-2167**

This is to certify that

KANA OILFIELD SERVICES LTD.
4107 - 41 STREET
WHITECOURT, ALBERTA

having complied with the provisions of the SAFETY CODES ACT, is hereby authorized to:

Construct, Repair/Alter ASME B31.1 Power Piping and ASME B31.3 Process Piping

Construct, Repair/Alter ASME B31.1 Boiler External Piping

Repair/Alter ASME Section I Power Boilers, ASME Section IV Heating Boilers and ASME Section VIII-1 Pressure Vessels

at the SHOP and FIELD sites controlled from the above address.

Alberta MUNICIPAL AFFAIRS

Dated at Edmonton, this 3rd day of May, 2006

Chief Inspector and Administrator

Form No. AB-121
Rev. (2008/04)

Certificate No.: 4974

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SECTION D SCOPE OF WORK

D.1 This section defines the intended scope of work to be performed by KANA OILFIELD SERVICES LTD. under this Quality System.

D.2 New pressure piping constructed under this Quality System shall conform to the scope, and all requirements of ASME B31.1 and ASME B31.3 Codes and the Alberta Safety Codes Act and Regulations. Boiler External Piping is within the scope of this Quality Control Program. Within these limitations pressure piping of all sizes, thickness and materials allowed by the ASME Codes shall be constructed, provided the requisite welding procedures are qualified and registered with the Alberta Boilers Safety Association. Pressure piping of all sizes and material may be fabricated and erected provided the President, General Manager and the Quality Control Manager determine KANA OILFIELD SERVICES LTD. is capable.

D.3 Work under this program may also include repairs, alterations and replacement of existing piping systems, that are under the jurisdiction of the Alberta Safety Codes Act and Regulations.

D.4 Repairs and alterations to existing power boilers, heating boilers and pressure vessels shall be in accordance with the Alberta Safety Codes Act and Regulations, and insofar as possible, with ASME Section I, ASME Section IV or ASME Section VIII, Division 1, as applicable. Pressure vessel repairs/alterations shall be limited within the thickness limits of KANA'S Welding Procedure and unlimited diameter, excluding any head or shell replacement, which shall be limited to vessels 914 mm (36 inch) in diameter. Alterations will be limited to installing additional nozzles, flanges, couplings and external attachments on pressure vessels. Boiler repairs shall be limited to repairs/alterations of Rig Boilers, Direct Fired Heaters, Heating Boilers and Small Power Boilers.

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SECTION D SCOPE OF WORK

D.5 Construction of Boilers, Pressure Vessels, and Fittings are not within the scope of this Quality System. Therefore, KANA OILFIELD SERVICES LTD. shall not engage in these activities.

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KANA OILFIELD SERVICES LTD.

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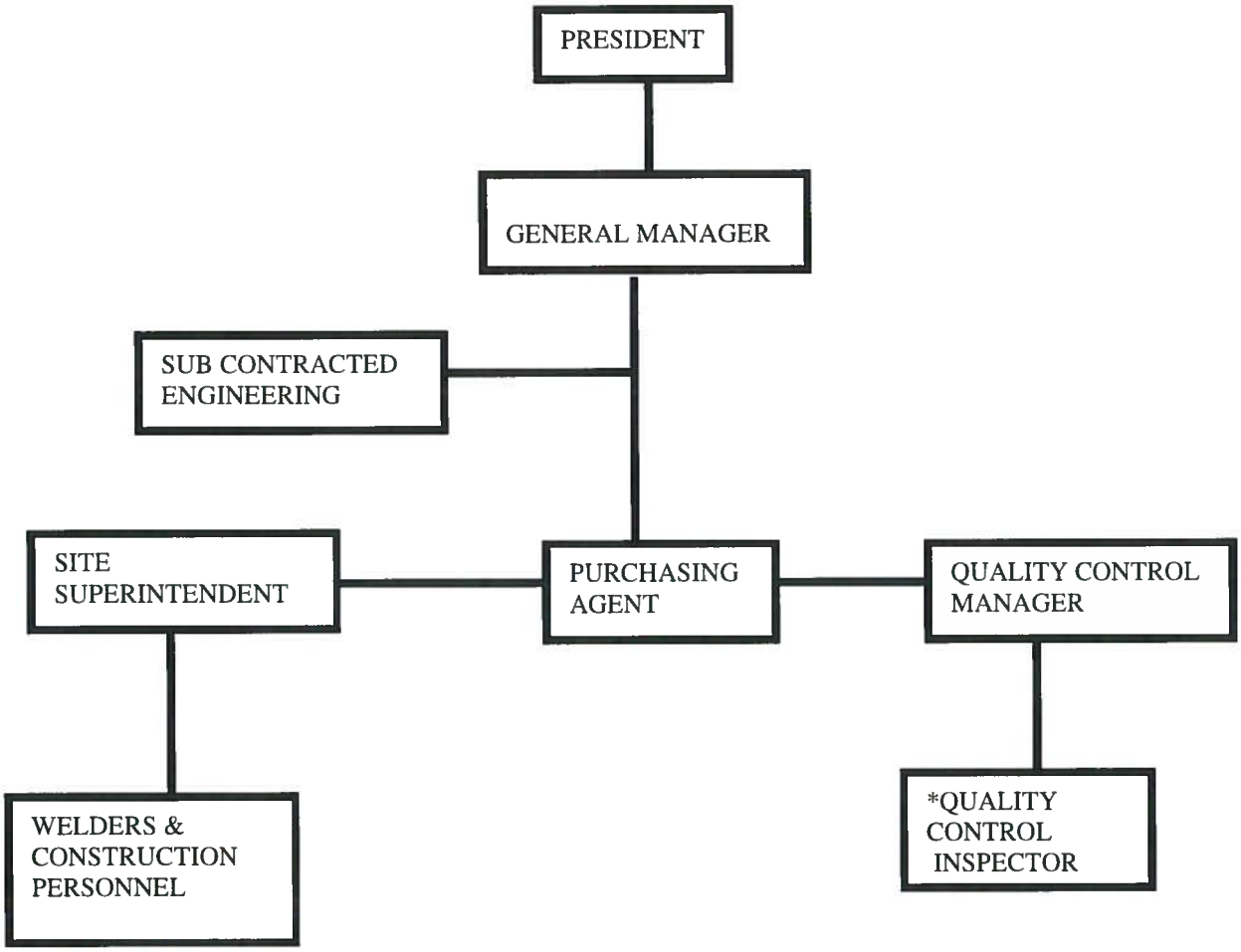
SECTION 3 ORGANIZATION CHART
KANA OILFIELD SERVICES ORGANIZATION CHART



NOTE: More than one position may be held by one person.

* **This position is assigned to the Site Superintendent unless otherwise specified by the General Manager.**

SECTION 4 DEFINITIONS

4.1 **ABSA**
ABSA, The pressure equipment safety authority is the regulatory organization delegated by the Province of Alberta to provide pressure equipment safety services under the Alberta Safety Codes Act, and acts as the sole Jurisdiction/Regulatory Authority as defined in CSA B51 Code and the ASME Code.

4.2 **ABSA SAFETY CODES OFFICER (ABSA SCO)/AUTHORIZED INSPECTOR**
A person appointed by the Technical Administrator of ABSA, to administer the Alberta Safety Codes Act and Regulations (Pressure Equipment).

4.3 **ALBERTA SAFETY CODES ACT**
The Alberta Safety Codes Act as it applies for pressure equipment and the following regulations under the Safety Codes Act:

- Boilers and Pressure Vessels Regulation and Exemption Order
- Design, Construction and Installation of Boilers and Pressure Vessels Regulations and Amendments (Design Regulations).
- Pressure Welder Regulation.
- Administrative Items Regulation

4.4 **ALTERATION**
A change in any item described on the Original Manufacturer's Data Report which affects the pressure containing capacity of a boiler, pressure vessel or pressure piping system. Non physical changes such as an increase in the maximum allowable working pressure or design temperature of a boiler or pressure vessel shall be considered an alteration. A reduction in the minimum temperature such that additional mechanical tests are required shall also be considered an alteration.

4.5 **ASTM**
American Society for Testing and Materials.

4.6 **BOILER EXTERNAL PIPING**
Piping as defined in ASME B31.1 Paragraph 100.1.2 (A) which is subject to mandatory inspection by the Authorized Inspector (ABSA SCO) as defined in PG 90 of ASME Section 1.

4.7 **C.G.S.B.**
Canadian General Standards Board.

4.8 **CODE**

Latest edition and addenda of the American Society of Mechanical Engineers codes:
ASME B31.1 Power Piping
ASME B31.3 Process Piping
ASME Section V Non-Destructive Examination
ASME Section IX Welding and Brazing Qualifications
ASME Section VIII, Division 1, Pressure Vessels
ASME Section I, Power Boilers
ASME Section IV, Heating Boilers

4.9 **CSA**

Canadian Standards Association

4.10 **JOB FILE**

A file which contains all records and documents which are essential to ensure the quality of the product. This file shall be assigned the number of each job. This number shall be a means of identifying each job.

4.11 **NONCONFORMITY**

Any condition which renders an item unacceptable or indeterminate for use because it does not comply with the Code, the Alberta Safety Codes Act, the Owner's specifications, design specifications or this Quality Control Manual. Examples of nonconformities include physical defects, test failures, improper documentation, loss of material identification, and deviations from drawings, specifications or procedures.

4.12 **OWNER'S INSPECTOR**

Inspector designated by the owner to verify that all required examinations and testing have been completed. This inspector cannot be an employee of the piping construction company. For the inspection of piping systems, he/she shall satisfy himself/herself that the piping system conforms to all applicable Code rules and company requirements. (e.g. refer to ASME B31.3 Chapter 1, paragraph 300 and Code Chapter VI, para 340 for requirements.)

4.13 **P. & I.D.**

Process and instrumentation diagrams.

4.13 **PRESSURE PIPING SYSTEMS UNDER SAFETY CODES ACT JURISDICTION**

Pipe, tubes, conduits, fittings, gaskets, bolting and other components which make up a system, the sole purpose of which is to convey and control the flow of expansible fluid between two points, at a pressure above 103 kPa (15 psi). Transmission pipelines as defined in the Pipeline Act are not under the Safety Codes Act.

4.15 **QUALITY CONTROL INSPECTOR (QCI)**
An employee of KANA OILFIELD SERVICES LTD. designated by the Quality Control Manager to perform the Quality System duties as defined in this manual. The Quality Control Inspector reports through the Quality Control Manager to the General Manager on any Quality System related issue.

4.16 **QUALITY CONTROL MANAGER (QCM)**
An employee of KANA OILFIELD SERVICES LTD. designated by the General Manager to have the responsibility and authority to maintain a Quality System and the organizational freedom to recognize Quality System problems and to provide solutions to those problems.

4.17**REGISTERED DESIGN**
Drawings, Specifications and information required by Part 2, Section 7 of the Design Regulations which have been reviewed and accepted for registration by ABSA.

4.18**REPAIR**
The work necessary to restore a boiler, pressure vessel or pressure piping system to a safe and satisfactory operating condition, provided there is no deviation from the original design.

4.19**SNT-TC-1A** (latest Code accepted edition)
"Recommended Practice for Nondestructive Testing Personnel Qualification and Certification" published by the American Society of Nondestructive Testing.

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SECTION 5 MANUAL CONTROL

5.1 This section describes the system for preparing, revising and controlling the distribution of this Quality System Manual.

5.2 The QCM is responsible for implementing this system. His/her duties include the following:

(a) to approve all proposed changes to the Quality System Manual, by signature and date on the Revision Summary page.

(b) to ensure that all revisions have been accepted in writing by ABSA prior to implementation. This acceptance will be indicated by a signature and date on the Revision Summary Page.

(c) to ensure that the revision no., date and page number are shown on each page of the manual. Revised paragraphs will be indicated by a vertical line in each margin alongside the changed paragraph(s).

(d) to issue revisions to all persons who are assigned controlled manuals with instructions that superceded pages are to be destroyed.

5.3 If additional controlled manuals are issued, the QCM will keep a list indicating manual numbers and who they are assigned to. Uncontrolled manuals may be issued for information but shall not be used for construction. "Uncontrolled" shall be indicated on the front page of these manuals.

5.4 A controlled copy of this manual shall be available at all times, on sites where work under this Quality System is being performed. This copy shall be made available to the ABSA Safety Codes Officer and/or the Owner's Inspector upon request.

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SECTION 6 CONTRACT REVIEW

6.1 This section describes the system to ensure that contract requirements are defined and agreed upon prior to the start of work.

6.2 The QCM shall review the contract/order prior to acceptance, to ensure that requirements are adequately defined. When requirements are inadequately defined or there is no written contract/order the QCM shall contact the client to ensure requirements are stated and agreed upon, and shall record the information in the job file.
He/she will ensure that:

(a) the scope of work is defined, including the applicable ASME Code and service (e.g. ASME B31.3 service category).
(b) the owner has approved the drawings for construction, repair or alteration.
(c) the material list including ASTM/ASME material specification numbers, grades, schedules, classes and sizes (as applicable), is provided.
(d) the welding procedures (owner's or contractor's) are specified and qualified for the job. If Owner's welding procedures are to be used it shall be on a per job basis and requires the written permission of the Owner.
(e) the degree and type of nondestructive examination (NDE) and type of pressure test is defined, and responsibility for these requirements is assigned.
(f) the responsibility for Quality System functions is defined.
(g) the responsibility for material procurement is defined.
(h) the responsibility for registering the drawings of pressure piping systems exceeding a total capacity of 0.5 cubic metres (18 cubic feet) with ABSA has been assigned.
(i) KANA OILFIELD SERVICES LTD. has the capability to meet all contract/order requirements.

6.3 The QCM shall obtain written verification defining responsibility for the above activities from the owner.

Note: The QCM shall make the Owner aware that under Alberta Design, Construction and Installation of Boilers and Pressure Vessels Regulations (paragraph 32(2)), the Owner must have an ABSA Authorized Quality System for scope of work if the Owner assumes responsibility for Quality System functions such as material receiving inspection, material traceability, welder supervision and welders' records, control of NDE on site, witnessing pressure tests, and preparing Quality System records. If the Owner does not have an ABSA Authorized Quality System for any of these functions, the QCM shall make the Owner aware that all requirements of this Quality System must be met. The Owner should also be made aware that he is responsible for registering the design with ABSA when the volume of any new piping system to be installed exceeds 0.5 cubic metres (18 cubic feet).

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SECTION 7 DOCUMENT CONTROL

7.1 This section describes the system for the preparation, review, approval, distribution and retrieval of all essential documents including design drawings and specifications, P and ID's, mechanical flow sheets, line equipment lists, material lists, spool sheets, isometrics, bill of materials, welding procedures, and work instructions.

7.2 Design drawings, calculations and specifications shall be prepared in accordance with the applicable ASME piping Code and the Alberta Safety Codes Act by the Client/Owner or by a subcontracted engineering firm experienced in ASME pressure piping design. Spool drawings may be prepared by KANA OILFIELD SERVICES LTD. when these are not supplied by the Owner.

7.2.1 The QCM shall review the design specifications and drawings to ensure the piping system can be constructed in compliance with the Code. The design specifications and drawings shall include the following information:

(a) Code of construction (e.g. ASME B31.3 normal service).
(b) Material description including; material specification, grade, dimensions, schedule, type, rating, etc.
(c) Design pressure and maximum/minimum design temperature of system, and if applicable, ASME B31.3 service category.
(d) Nondestructive examination and extent (i.e. random, 100%).
(e) Test pressure and medium.
(f) Heat treatment temperature and holding time if applicable.
(g) Construction details, supports, etc.
(h) Welding procedure information (W.P.S. Numbers/electrode classification)
(i) Additional requirements.

7.2.2 The QCM shall be responsible for verifying that the design drawings and specifications have been registered with ABSA and have a design registration number for systems that exceed 0.5 cubic metres in aggregate capacity. For piping systems less than or equal to 0.5 cubic metres in capacity, the submission of drawings is not mandatory; however, all pressure piping systems must comply with the requirements of the Code. All design drawings for pressure piping systems exceeding 0.5 cubic metres in aggregate capacity shall be stamped by a Registered Professional Engineer.

7.2.3 If the Owner has not prepared design specifications, and the piping system meets the following criteria:

(a) new piping systems having an aggregate volume equal to or less than 0.5 cubic metres.
(b) repairs or modifications, with an aggregate volume equal to or less than 0.5 cubic metres, to existing piping systems.

The QCM shall prepare a Piping Construction, Repair or Alteration Specification Sheet (Exhibit # 1) to fulfill the specification requirements of Para. 7.2. The QCM shall obtain approval of these specifications from the Owner prior to construction, repair or alteration.

7.3 The QCM is responsible for the control of all documents and drawings. His/her duties include:

(a) to release all drawings by stamping (or writing) "Issued For Construction" on the drawing, and initialing and dating each drawing (when such drawings are not issued by the Owner).
(b) to obtain written approval from the Owner prior to making any proposed changes.

Spool Drawings
(c) to review, approve and issue for construction any spool drawings prepared by KANA OILFIELD SERVICES LTD. from Owner's design specifications and drawings.

Job File
(d) to initiate a job file and ensure that all design specifications, Owner's material lists, purchase orders, etc. are kept in this file, each identified with the job number.

Drawing and Specification Distribution
(e) to maintain a drawing list indicating the drawing title, number and revision, copies issued and the name of the person to whom they were issued.
(f) to issue drawings, specifications, welding procedures, P.O.'s, material lists and applicable quality control forms to each QCI.
(g) to recall and destroy all superceded documents. Alternatively, these may be marked "Void" and kept in the job file.

As Built Drawings
(h) to obtain the Owner's approval of any revisions and submit the final "as built" drawing to the Owner along with all pertinent records.

7.4 Handling of Drawings, Specifications and Documents at Site

The QCI shall:

(a) maintain job file(s) at site containing drawings, specifications, welding procedures, P.O.'s material lists and applicable quality control forms and documents. Issue drawings and specifications to site personnel. Collect and mark "Void" or destroy all superceded documents.

(b) forward the job file to the QCM when the job is completed.

APPLICABLE DOCUMENTS/FORMS

- Piping Construction, Repair or Alteration Specification Sheet, Exhibit # 1

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SECTION 8 MATERIAL CONTROL

8.1 This section describes the system for ordering, receiving, identifying and maintaining traceability of all Code material.

Note: All the material receiving, identification/verification and coding requirements defined in this section also apply to Owner supplied material. When material is supplied by the Owner it shall be checked by the QCM/QCI upon receipt against the Owners material list (see Para. 8.3).

8.2 Purchasing

8.2.1 The Purchasing Agent shall be responsible for ordering all material. The Purchasing Agent will prepare a purchase order (Exhibit # 2) from the material list on the drawing. It shall include:

(a) Purchase Order (P.O.) Number and Job No.
(b) ASME/ASTM specification and grade, schedule dimensions, fitting, type, rating, etc as applicable
(c) Supplementary requirements such as Heat Treatment (e.g. normalizing), special chemistry, etc.
(d) Requests for mill test reports when required by the Owner's specifications (optionally require KANA OILFIELD SERVICES LTD.'s P.O. number to be written on MTRs).
(e) Statement that all fitting designs be registered with the Alberta Boilers Safety Association.
(f) Welding consumables must be ordered by SFA specification and AWS classification, as required by the welding procedures to be used.

8.2.2 The purchase order shall be reviewed and approved by the QCM prior to issue. One copy of the purchase order shall be forwarded to the vendor and one copy shall be retained by the QCM in the job file. A copy of the purchase order shall be forwarded to the QCI at field sites to enable receiving inspection against the purchase order.

8.2.3 Any proposed material substitutions must be approved in writing by the Owner and Designer. Revised drawings and specifications shall be prepared and issued in accordance with Section 7 of this manual.

8.3 Material Receiving

The QCI is responsible for receiving and storage of material at site. His/her duties include:

(a) Checking all incoming material against the purchase order/Owners material list, and packing slip for:
  {i} visible damage
  {ii} correct dimensions
  {iii} correct material markings, specification and grade, size, rating, name of manufacturer or trademark, etc. as applicable. (Refer to Exhibit # 3 for typical markings)

(b) Checking MTRs (material test reports), when supplied, against material markings and verifying that all material markings match those described on the MTRs and confirming that the MTRs are identified with the purchase order number; acceptance shall be indicated by initial and date on the MTR. In the event that MTRs are not supplied, then Section 8.3 (a) {iii} shall be deemed acceptable.

(c) Segregating and identifying acceptable material.

8.4 Boilers, Pressure Vessels and Skid Package Units

The QCI will visually examine each boiler or pressure vessel and skid package on arrival and will notify Owner's Inspector if damage is suspected.

The ABSA Safety Codes Officer shall be notified when system has been completed to enable him/her to verify the boiler or pressure vessel installation. He/she shall also be informed immediately if any boiler or pressure vessel is damaged. (Refer to 9.4)

8.5 Nonconforming Items/Material

Any material or item that does not meet above requirements shall be considered a nonconformity and shall be processed in accordance with Section 12 of this Manual.

8.6 The QCI is responsible for identification and traceability of all material at the site. He/she shall:

(a) ensure that the correct colour code is provided to site personnel.

(b) code each acceptable pipe for its full length with a paint stripe using the colour coding shown on Exhibit # 4. If required by the Owners specifications, an alternate colour code may be used or the material specification and grade shall be marked on **each piece**, and **each cut off, prior to the cut**.

(c) verify that the above identification is maintained on each piece of pipe throughout construction, repair or alteration.

(d) ensure that piping spools, received at the site, are identified with the line number, spool number and job number, and that spool lists are supplied with each shipment. (Piping Construction Data Reports AB-83 are required if spooling is subcontracted).

(e) verify that all material left at end of project is fully identified and itemized on a material list.

Material Transfers

(f) ensure that material shipped from another site is accompanied by a material list

.

(g) ensure that spooling to be installed at another site is identified with the spool number, job number and line number and that the spool list is sent with each shipment.

APPLICABLE DOCUMENTS/FORMS

- Examples of Typical Markings Used on Valves and Fittings, Exhibit # 3
- Purchase Order, Exhibit # 2
- Color Code for Pipe, Fittings and Flanges, Exhibit # 4

ABSA/Alberta Municipal Affairs Forms

- Construction Data Report for Piping Systems, AB-83

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SECTION 9 EXAMINATION AND INSPECTION PROGRAM

9.1 This section describes the system to verify that all pressure piping construction meets the Code, job specifications and drawings. Under the Code, inspection applies to functions performed by the Owner's Inspector; and examination to functions done by KANA OILFIELD SERVICES LTD. It is the Owner's responsibility to provide an Inspector who shall inspect the piping to verify that all examination requirements have been completed in accordance with the Code and the design specifications. Inspection by the Owner does not relieve KANA OILFIELD SERVICES LTD. from the responsibility of performing all examinations required by the Code, Owner's specifications and this Quality System.

9.2 QCM's Duties

The QCM is responsible for the overall examination program. He/she shall:

(a) issue Quality System manuals, Owner's specifications, drawings, Quality System forms, ABSA forms, material lists, purchase orders, calibration records, etc. to the QCI prior to start of work.

(b) review all completed records for compliance with the Code, Owner's specifications and this Quality System, and forward the Completion of Construction Declaration Form (AB-81) to ABSA (for piping systems exceeding 0.5 m3 in volume).

(c) ensure that each individual assigned to perform Quality System functions is competent and fully understands all applicable requirements referred to in this Quality System Manual.

(d) forward the Construction Data Report for Piping Systems (AB-83) to the Owner with any additional records required by the contract.

9.2 QCI's Duties

The QCI is responsible for the site examination program. He/she shall:

(a) Initiate a job file, and maintain all records detailed in Section 17 in this file.

(b) Prior to starting fabrication, notify the Owner's Inspector of the job and obtain inspection hold points.

(c) Perform all the examinations required under the Code. These are detailed on the Pressure Piping Examination and Inspection Sheet (Exhibit # 5). Additional functions will be detailed on the back of the checklist, when applicable.

(d) Sign and date each function on the Pressure Piping Examination and Inspection Sheet when

(e) Communicate with the Owner's Inspector to arrange for inspection and sign off, when inspection hold points are reached.

(f) Examine each system after completion and prior to test against design specifications and drawings using the Pressure Test Examination Guide (Exhibit # 6).

(g) Prepare and sign the Alberta Construction Data Report for Piping Systems (AB-83) for all spools and/or complete systems constructed, repaired or altered by KANA OILFIELD SERVICES LTD. and present the forms to the Owner's Inspector for his/her signature. Prepare and sign the Completion of Construction Declaration Form (AB-81) for piping systems exceeding 0.5 m3 in capacity constructed, repaired or altered by KANA OILFIELD SERVICES LTD.

(h) Verify that the "as built" drawings have been revised to incorporate all changes and that the changes have been approved by the Owner.

(i) Forward the Job File, drawings and radiographs to the QCM.

9.3 Boilers and/or Pressure Vessels Installed at Site

The QCI will ensure that:

(a) Each boiler and/or pressure vessel is installed in accordance with job specifications and the Alberta Safety Codes Act and Regulations.

(b) The ABSA Safety Codes Officer is notified at start of construction to enable him/her to inspect the installation of each boiler and pressure vessel prior to start up.

9.4 Boiler External Piping

(a) All material shall be ordered to an ASME SA/SB specification.

(b) Inspection by the Authorized Inspector (i.e. ABSA SCO) is mandatory.

(c) The Quality Control Manager shall develop an individual Examination and Inspection Sheet (Exhibit # 5) for each system detailing all examination and inspection steps required. Each function shall have provision for the acceptance by signature and date of the QCI and the Authorized Inspector. This sheet is to be presented to the Authorized Inspector prior to the start of work to enable him/her to include his/her hold points.

(d) The system shall be subject to a hydrostatic test in accordance with ASME Section I.

(e) The Construction Data Report for Piping Systems (AB-83) shall be presented to the Authorized Inspector for signature and date.

(f) The Completion of Construction form (AB-81) will be filled out and a copy forwarded to the ABSA Design Survey Section.

APPLICABLE DOCUMENTS/FORMS

Pressure Piping Examination and Inspection Sheet, Exhibit # 5

ABSA/Alberta Municipal Affairs Forms

- Completion of Construction Declaration, AB-81
- Construction Data Report for Piping Systems, AB-83

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SECTON 10 REPAIRS AND ALTERATIONS TO BOILERS AND PRESSURE VESSELS

10.1 This section describes the system for controlling the repairs and alterations of existing boilers and pressure vessels. All other sections of this manual shall apply for repairs and alterations, except as modified in this section.

10.2 All repairs and alterations shall be in accordance with the Alberta Safety Codes Act, and, insofar as possible, ASME Section I, ASME Section IV or ASME Section VIII, Division 1, as applicable.

10.3 **Routine Repairs** are defined as:

(a) Welded repair or replacement of an **isolated** section of tube or pipe not over NPS 5 (5.563 inches in outside diameter), and their attachements.

(b) The addition or repair of non-load-bearing attachments to pressure-retaining parts where post-weld heat treatment is not required.

(c) Weld build-up of wasted areas in shells and heads not exceeding 100 sq. inches in area and the lesser of 25% of nominal wall thickness or ½ inch in thickness.

(d) Corrosion resistant weld overlay not exceeding 100 sq. inches.
(e) Welded repairs to treater firetube welds when the repair does not involve replacement of any base metal.

10.4 The Quality Control Manager will develop a written procedure for all repairs and alterations containing the following information:

(a) Boiler or pressure vessel description.
(b) Year built.
(c) A number
(d) CRN
(e) Manufacturer
(f) Owner's name and Owner's Boiler or Pressure Vessel I.D. number when applicable.
(g) Location of pressure vessel or boiler.
(h) Detailed description of the repair and alteration methods.
(i) Weld details.
(j) Welding procedure specification number.
(k) Material used by specification number, grade, and size.
(l) NDE requirements.
(m) PWHT requirements.
(n) Pressure test requirements.

(o) Any additional requirements.

The repair or alteration report (AB-40) may be used to detail the repair or alteration procedure when suitable.

10.5 The Quality Control Manager shall obtain acceptance of the repair or alteration procedure from the ABSA Safety Codes Officer prior to the start of work. When required by the ABSA Safety Codes Officer, this procedure shall be submitted to the ABSA Design Survey Section for acceptance. The Quality Control Manager shall ensure copies of all latest repair or alteration procedures, drawings and instructions are provided to the personnel responsible for the repair or alteration. For **routine repairs** (as defined in Section 10.3) conducted at plant sites, with prior agreement from ABSA and the Owner, the ASME Code inspection requirements may be modified or waived.

10.6 **ABSA Authorized Owner User Inspection Quality Systems**

10.6.1 When field or on plant site repairs are performed for an organization with a valid Certificate of Authorization issued by ABSA for an Owner User Pressure Equipment Inspection Quality System, the QCM shall establish who will be responsible for the ASME Code inspections when the contract is initiated (whether the ABSA Safety Codes Officer or Owner User Inspector performs ASME Code required inspections). Owners that have an ABSA Owner User Certificate of Authorization may be authorized to perform the repair ASME Code inspections that are Otherwise performed by an ASME Safety Codes Officer. The scope of permitted Owner User inspections is defined in their Owner User Quality System manual and this is limited to repairs done at their facilities only. An Owner User may elect to have all repair ASME Code inspections done by ABSA.

10.6.2 The ABSA Safety Codes Officer and the Owner User Inspector shall be notified prior to the start of work to accept repair methods and designate any hold and inspection points. The ABSA Safety Codes Officer may require that the repair procedure be submitted to the ABSA Design Survey Section for acceptance.

10.6.3 The ABSA Safety Codes Officer and/or the Owner User Inspector shall be notified of all nonconformities.

10.6.4 The ABSA Safety Codes Officer or the Owner User Inspector is required to inspect the repair and certify the repair or alteration report. KANA OILFIELD SERVICES LTD. shall complete and certify this report for all repairs including those defined as routine. Owner User Certification of Compliance shall also be obtained when applicable.

10.7 If the boiler or pressure vessel is still under warranty, the Quality Control Manager will contact the Owner to obtain acceptance of the proposed work from the boiler or pressure vessel manufacturer.

10.8 For alterations, the Designer will prepare detailed design calculations and drawings in accordance with the applicable referenced ASME Code section. The Quality Control Manager will submit the alteration procedure, design calculations, and drawings to ABSA Design Survey Section for acceptance prior to starting work.

10.9 The Purchasing Agent is responsible for ordering all material. The Purchasing Agent will prepare a Purchase Order (P.O.) (Exhibit # 2) from the repair or alteration drawing or procedure. The P.O. shall include:

(a) The purchase order number.
(b) The material ASME Specification number, grade, schedule, dimensions.
(c) Request for MTRs for shells, heads, repads and other pressure retaining material and pipe material used for pressure vessel shells.
(d) Request for partial data reports for welded parts supplied by others.
(e) Request for certification to ASME Section VIII, Division I paragraph UCS 79 (or para. UHT 79, where applicable) for cold formed heads, shells and other pressure parts cold formed from carbon and low alloy steel plates for pressure vessel use.
(f) Instructions that a welding procedure qualified to ASME Section IX must be used for all tack welds.
(g) Heat treatment requirements.
(h) NDE Requirements.
(i) Statement that all fitting designs must be registered with the ABSA or the applicable jurisdiction as required.
(j) Other job specifications.

Any proposed material substitutions must be approved in writing by the Owner, the Designer and ABSA Safety Codes Officer, when applicable.

10.10 The Quality Control Inspector (QCI) is responsible for receiving all material. His/her duties include:

(a) Checking all material received against the purchase order and packing slip for visible Damage, correct identification, markings, dimensions, thickness, ASME material specifications and grade.
(b) Identifying all acceptable material with a job number and highlighting the material specification and grade stamping by circling with a water proof crayon.
(c) Verifying that the material is as specified on the drawings and conforms to ASME Code

requirements.

(d) Confirming that the material identification markings conform to the material test reports and /or partial data reports.

10.11 The QCI is responsible for identification and traceability of all materials. His/her duties include:

(a) Recording the material specification number, grade, thickness, etc. on the Repair or Alteration Examination and Inspection Sheet (Exhibit # 6). In addition to this information heat and slab numbers shall be recorded for all shell, head and plate pressure retaining material, and any pipe used for pressure vessel shells.
(b) Ensuring that material identification markings are transferred prior to dividing any material. This identification will be die stamped for carbon steel material ¼" and over. For other material, identification will be by waterproof marker.
(c) Checking, with templates, the dish and knuckle radii of replacement formed heads.
(d) Verifying that the material test reports include physical tests and chemical analysis and conform to ASME Section II requirements. If the Material Test Reports (MTRs) conform to Section II, the Quality Control Inspector will sign and date the MTRs.
Note: Material Test Reports are required for all pressure retaining plate material and pipe Shells.
(e) Ensuring that all pipe material is colour coded by a paint stripe over the full length as stipulated in the material control section of this manual. To ensure identification to the specification and grade, for product forms such as couplings and nozzle pieces and attachments, each piece may be marked or stamped with the specification and grade or a coded marking acceptable to the ABSA Safety Codes Officer (or Owner User Inspector when applicable) may be used as per Exhibit # 7.
(f) Ensuring that flanges and fittings are identified by job number and stored by the job.

10.12 The Quality Control Manager is responsible for the examination and inspection program. His/her duties include:

(a) Initiating a job file to include the travel sheet, material reports, drawings, calculations, material test reports, non-destructive examination (NDE) reports, heat treatment (HT) reports, manufacturers data reports, and material receiving reports.
(b) Initiating a Repair or Alteration Examination and Inspection Sheet (Travel Sheet) (Exhibit # 6) for each repair and alteration and presenting it to the ABSA Safety Codes Officer (and/or Owner User Inspector when applicable) with drawings, specifications and calculations prior to the start of the job.
(c) Notifying the ABSA Safety Codes Officer (and/or the Owner User Inspector when applicable) reasonably in advance of any hold points. Work shall not proceed beyond an established hold point until the ABSA Safety Codes Officer (and/or Owner User Inspector when applicable) has released the hold by signing the travel sheet.
(d) Performing all examination functions specified on the travel sheet and signing and dating each function when it is completed.

(e) Verify that applicable material is identified with specifications and heat numbers and that these heat numbers are transferred and remain traceable throughout the repair or alteration.
(f) Verify that material contains no visible defects and is as specified on the drawings or repair or alteration procedure. If material nonconformities are found, the ABSA Safety Codes Officer (and/or Owner User Inspector when applicable) must accept all material repair procedures prior to commencement.
(g) Ensure that material test reports are available for all pressure plate material and for all pipes used for pressure vessel shells and additional components as required by the customer.
(h) Ensuring alignment tolerances are maintained during the repair or alteration.
(i) Weld details are correct.
(j) Non-destructive examination is performed in accordance with Section 13 of this manual and the referencing ASME Code Section
(k) Heat treatment instructions are prepared in accordance with Section 14 of this manual and the referencing ASME Code Section, and heat treatment charts comply with instructions.
(l) The correct hydrostatic test pressure, as indicated on the accepted repair or alteration procedure, is applied.

10.13 When required by the ABSA Safety Codes Officer (and/or Owner User Inspector when applicable), an identification plate (Exhibit #8) will be attached to the pressure or boiler adjacent to the pressure vessel or boiler manufacturer's nameplate with the following information:
(a) Repaired, Altered or Re-rated.
(b) Name of repair or alteration organization.
(c) Date of repair or alteration.
(d) Maximum allowable working pressure and temperature.
(e) Minimum design metal temperature and pressure (when applicable).
(f) CRN

10.14 Upon satisfactory completion of the repair or alteration report, the Quality Control Manager will complete and certify the repair or alteration report (AB-40) and present it to the ABSA Safety Codes Officer (and/or the Owner User Inspector, when applicable) for acceptance. For routine repairs where ASME Code inspections have been waived by the ABSA Safety Codes Officer (and/or the Owner User Inspector when applicable), a notation "Routine Repair" shall be made in the remarks section of the Repair or Alteration Report. A copy of the repair or alteration report shall be provided to the ABSA Safety Codes Officer and the Owner.

10.15 The Quality Control Manager will assign a separate job number and file for each boiler or pressure vessel repaired or altered. The file will contain the following information:

(a) Drawings
(b) Calculations
(c) Repair or alteration procedure
(d) Purchase orders
(e) Material test reports
(f) NDE reports and copies of examiners' certifications
(g) Heat treatment instructions and charts
(h) Weld identification records (when welds are not stamped) and copies of welders' performance qualification cards
(i) Nonconformity reports
(j) Examination and inspection sheet and reports
(k) Repair or alteration report with partial data reports when applicable

10.16 The job file shall be retained for a minimum of 5 years.

APPLICABLE DOCUMENTS/FORMS

- Repair or Alteration Examination and inspection Sheet, Exhibit # 6
- Coded Markings, Exhibit # 7
- Sample Nameplate for Repairs or Alterations, Exhibit # 8

ABSA/Alberta Municipal Affairs Forms

- Boilers and Pressure Vessels Repair or Alteration Report, AB-40

11.1 This section describes the system for controlling all welding, welding procedures and welders' performance qualification tests.

11.2 Welding Procedures

The QCM is responsible for the control of Welding Procedures. His/her duties include:

(a) Verifying that welding procedures have been registered with ABSA for the scope of work indicated in the Design Specifications, before the start of work.
(b) Engaging a Welding Consultant to assist in the preparation of Welding Procedure Specifications (WPS), and Procedure Qualification Records (PQR) and to conduct physical tests; if KANA OILFIELD SERVICES LTD. is required to develop new procedures. The QCM will witness the welding of the test coupons for the procedure qualifications.
(c) Certifying the WPS and PQR for any new KANA OILFIELD SERVICES LTD. procedures and submitting them to the ABSA for registration.
(d) Ensuring copies of the registered welding procedures are available at each work site.
(e) Ensuring welding procedures to be used are detailed on the construction, repair or alteration drawings.
(f) Obtaining written permission from the Owner on a per job basis, if the Owner's welding procedures are to be used.

11.3 Welder Supervision and Record

The Site Superintendent is responsible for supervision of all welders. His/her duties include:

(a) verifying, prior to work, that welders have:
  (i) an Alberta Pressure Welders Certificate of Competency.
  (ii) a valid performance qualification card, issued by ABSA or an accredited organization authorized by the ABSA, for the scope of work to be performed.
(b) keeping a copy of each welder's performance qualification card on file.
(c) recording the details from each welder's performance qualification card(s) on the Welders' Log (Exhibit # 9)
(d) issuing symbol stamps to each welder and recording the symbol assignment on the Welders' Log.
(e) Instructing each welder prior to start of work to ensure that he/she understands the welding procedure requirements, the job specifications, the system for controlling electrodes and the application of welders' symbols.
(f) Ensuring that all welding procedure requirements are followed and visually examining each completed weld.
(g) Verifying that all welds are identified with the welder's symbol by stamping or recording on construction, repair or alteration drawings.

11.4 Welding Consumable Control

The Site Superintendent is responsible for control of welding consumables at site, including those supplied by the Welder. He/she shall:

(a) Examine welding consumables (including those in each portable rig) prior to start of work to verify that they are identified with the correct AWS classifications (e.g. E7018) as indicated on welding procedures and job specifications.
(b) Verify prior to the start of work that all low hydrogen electrodes are packaged in air-tight containers and that there are no open boxes or incorrect electrodes in portable rigs.
(c) Ensure that low hydrogen electrodes are placed in heated storage at temperatures according to the electrode manufacturer's specifications, upon removal from hermetically sealed containers.
(d) Instruct welders to remove only enough electrodes from the heated storage for 2 hours welding.
(e) Inform welders that low hydrogen electrodes which have been out of sealed or heated storage for more than 4 hours shall not be used and shall be discarded or segregated to an oven marked for non-code work only.

APPLICABLE DOCUMENTS/FORMS

- Welders Log, Exhibit # 9

SECTION 12 NONCONFORMITIES

12.1 This section describes the system for identifying, documenting, and resolving nonconformities found at receiving, during construction, repair or alteration, examination or testing.

12.2 The QCM shall be responsible for the disposition of all nonconformities.

12.3 All nonconformities relating to completed pressure piping shall be corrected or eliminated before the completed component can be considered to comply with the Code.

12.4 Identification No./Documentation

12.4.1 All nonconformities shall be reported immediately to the QCI and shall be identified by tagging or marking the item with a red paint marker and by removing the item from the work area. A detailed description of each nonconformity shall be provided on a nonconformity shall be provided on a Nonconformity Report (Exhibit 10). The QCI will be responsible for documenting the nonconformity.

12.5 Disposition

12.5.1 If the resolution of a nonconformity alters the design specifications in any way, the Owner and Designer must also approve the disposition. Examples of this are material substitutions or incorrect size and/or thickness. The ABSA SCO must also approve the disposition for Boiler External Piping and all repairs and alterations to boilers and pressure vessels.

12.5.2 The QCM will contact the Owner to verify that the drawings and specifications are prepared and issued in accordance with Section 7 of this Manual if the design is to be revised.

12.5.3 If it is decided that the item can be repaired, the QCM will prepare a repair procedure which must have the approval of the Owner's Inspector (and ABSA SCO when required by 12.5.1 above).

12.5.4 The affected item will be released for fabrication only when the QCM and the Owner's Inspector (and ABSA SCO when required by 12.5.1 above) have accepted the completion of the nonconformity by signing and dating the Nonconformity Report.

12.5.5 All documentation pertaining to nonconformities will be filed in the job file.

APPLICABLE DOCUMENTS/FORMS

- Nonconformity Report, Exhibit # 10

SECTION 13 NONDESTRUCTIVE EXAMINATION

13.1 This section describes the system to ensure that all nondestructive examinations (NDE) are completed in accordance with ASME Section V, the referencing Code section (including ASME B31.3 service category requirements), and job specifications. This applies to radiographic, ultrasonic, magnetic particle and dye penetrant examination.

13.2 The QCM shall be responsible for appointing, in writing, all NDE subcontractors, and shall ensure the following:

(a) Nondestructive Examination shall be performed by a subcontracted service. The required NDE shall be specified on all drawings and/or procedures approved for construction, repair or alteration.

(b) All NDE subcontractors to KANA OILFIELD SERVICES LTD. shall specify that:

(1) All personnel performing NDE shall be qualified and certified in accordance with SNT-TC-1A or CGSB.
(2) There shall be a level III examiner on staff to be responsible for NDE procedures and supervise examiner certification and training.
(3) That all examination be done under the supervision of a level II or level III examiner.
(4) That all interpretation be done by a level II or level III examiner.
(5) Ensure NDE contractor approval form has been completed and on file.

13.3 The QCI is responsible for control of NDE at the job site. His/her duties include:

(a) To verify that NDE Contractor has applicable written procedures, available at site, for each method to be used.
(b) To verify that NDE examiners have valid ASNT or CGSB Certification for the applicable test methods, and to maintain certificate details of each examiner in the job file. Interpretation of radiography and ultrasonic code examinations must be done by a level II or level III examiner.
(c) To ensure that examiners are aware of extent and type of NDE required by the job specifications and the acceptance standards.
(d) To initiate a suitable flagging system to identify the welds to be examined.
(e) To maintain records indicating welds examined.
(f) To maintain records indicating the welds placed by each welder by recording symbols on construction drawings or keeping a list. (This is needed for full and random radiography; 5% by random radiography means 5% of fabrication with the work product of each welder or welding operator doing the production welding included).
(g) To indicate acceptance of each weld examined by recording the radiograph and/or ultrasonic examination identification number on the construction, repair or alteration drawing.
(h) To verify that all NDE has been completed in accordance with this section, by reviewing the the radiographic film, interpretation sheets and NDE reports.

(i) To forward all NDE reports and radiographic film to QCM upon completion of work.

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Whitecourt AB T7S 1N8

SECTION 14 HEAT TREATMENT

14.1 This section describes the system to ensure that all heat treatment is performed in accordance with the Code and job specifications.

14.2 The QCM will issue written instructions to the subcontractor (Exhibit # 11) specifying holding time, holding temperature, heating and cooling rates and any special instructions, when KANA OILFIELD SERVICES LTD. is responsible for assigning the heat treatment contractor.

14.3 The QCI's duties include:

(a) Notify heat treatment company as to which welds must be heat treated.
(b) Verify that heat treatment procedures are adequate; including location of thermocouples, and calibration records for measuring instruments.
(c) Verify that the calibration records are available at the site for measuring instruments and recorders.
(d) Check the time temperature chart against the job specifications and the thermocouple diagram; and verify that all time temperature charts are identified with thermocouple location numbers, weld identification, job number and the signature of the contractors representative.
(e) Indicate the completion of each weld heat treated on construction, repair or alteration drawings.
(f) File the charts, thermocouple diagrams, calibration records, etc. in the job file.

APPLICABLE DOCUMENTS/FORMS

- Heat Treatment Form, Exhibit # 11

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SECTION 15 MEASURING AND TEST EQUIPMENT

15.1 This section describes the system to control the calibration of pressure gauges and recorders.

15.2 The QCM is responsible for the control of test equipment. He/she shall ensure that:

(a) All gauges and recorders are identified with a serial number and date of required re-calibration (Calibration Expiry Date).
(b) All gauges are calibrated by a qualified testing laboratory against a dead weight tester traceable to a national standard.
(c) All gauges used for pressure testing shall have a range suitable for the test pressure (1.5 to 4 times the test pressure) and are accompanied by a copy of the latest calibration record.
(d) Pressure gauges shall be calibrated at intervals not exceeding 12 months.
(e) Records of pressure gauge calibrations are maintained.

15.3 The QCI shall:

(a) Examine the equipment, prior to the test, for visible damage and calibration status, and verify that the equipment is of suitable range for the test.
(b) Return all test equipment to the QCM upon completion of testing and identify any equipment that requires recalibration or repair.

SECTION 16 PRESSURE TESTS

16.1 This section describes the system for ensuring that all pressure testing, including hydrostatic, pneumatic, service and sensitive leak tests are completed in accordance with the design specifications and Code service category requirements.

16.2 Written Procedures

All pressure tests shall be performed in accordance with a written test procedure, which meets with Code and job specifications. Pressure tests will be performed before the pipe or the repaired or altered part of a boiler or pressure vessel is buried or insulated.

Note: In view of the hazard involved, pneumatic testing is permitted only when a hydrostatic test is not practical. Pneumatic test proposals shall be approved by Owner and ABSA Design Survey Section prior to the test. Pneumatic test procedures shall contain information specified in Exhibit # 12. Sensitive leak tests shall meet requirements of ASME Section V, Article 10.

16.3 QCM's Duties

The QCM is responsible for the implementation and control of the section. His/her duties include the following:

(a) Preparing the written test procedure for all pressure tests.
(b) Ensuring that the test procedure is accepted by the Owner's representative prior to the test.
(c) For pressure piping systems exceeding 0.5 m3 in aggregate volume, submitting all proposed pneumatic test procedures to the ABSA Design Survey Section for acceptance prior to the test.
(d) For pressure piping systems equal to or less than 0.5 m3 in aggregate volume, submitting a standard pneumatic test procedure detailing the scope of the test to the ABSA Design Survey Section for acceptance prior to the initial test. Once accepted by ABSA Design Survey, when hydrostatic testing is not practical, all pneumatic tests within the scope of the standard procedure may be conducted providing concurrence is obtained from the Owner prior to the test.
(e) Distribute the procedure to site personnel.

16.4 The QCI's Duties Include

(a) Notifying the Owner's Inspector, reasonably in advance of any pressure test.
(b) Witnessing all pressure tests and verifying that the tests were performed in accordance with the approved procedures and job specifications.
(c) Examining the system prior to the test and after completion using the Pressure Test Examination Guide, (Exhibit # 13).
(d) Highlighting on the construction drawings, each section tested.

APPLICABLE DOCUMENTS/FORMS

- Guidelines for the Preparation of Pneumatic Testing Procedure, Exhibit # 12
- Pressure Test Examination Guide, Exhibit # 13
- Hydrostatic Pressure Test Report, Exhibit # 14

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Whitecourt AB T7S 1N8

SECTION 17 RECORD RETENTION

17.1 This section describes the records that will be maintained in accordance with Code and Contract Requirements.

17.2 The QCM will ensure that the following records are maintained in a file designated as the Job File, identified by job number, for a minimum of five years.

(a) Design specifications
(b) Drawings
(c) Pressure piping data reports
(d) Material test reports (when required)
(e) NDE reports
(f) Physical test reports
(g) Radiographic film and interpretation sheets (except when Owner retains film)
(h) Heat treatment records
(i) Nonconformity reports
(j) Welders' records and weld identification drawings (when required)
(k) Welding procedures
(l) Pressure test procedures and reports
(m) Material lists, spool lists, purchase orders generated by KANA OILFIELD SERVICES LTD.
(n) Copy of NDE examiners' certificates
(o) As built drawings

17.3 The QCI will maintain a file of all applicable documents at the site and forward them to the QCM upon completion of the job.

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SECTION 18 SAMPLE FORMS

KANA OILFIELD SERVICES LTD.
PIPING CONSTRUCTION, REPAIR OR ALTERATION REPORT

(For Const./Repair/Alteration Of Pressure Piping Systems Less Than or Equal to 0.5 Cubic Metres Aggregate Volume)

Owner: _____ Contractor: _____ AQP: _____

Plant Location: _____ Job No.: _____

Material List				**Piping Sketch** (Reference attached drawings if appropriate)
Item No.	Description	Mat'l Spec. & Grade	Sch./ Rating	(use for recording RT Nos. & Welder Symbols)

Line No.	Design Pressure	Design Temp. Min./Max.	Corr. All.	ASME Code B31.1/B31.3	Service (e.g. Normal, Cat. D, Sev. Cyclic)	Test Pressure	Test Medium

(Note: Pneumatic tests must have prior approval from the Alberta Boilers Safety Association)

Welding Procedure Specification Numbers: _____

Line No.	MPI / LPI Extent %	Radiography Extent %	Hardness Test.	Ultrasonic-Other NDT Description / Extent %	Other Requirements

NDE Contractor: _____

Post Weld Heat Treatment Yes/N.A.: _____ Contractor: _____

Approved by Owner: _____ Date: _____

Approved by Contractor: _____ Date: _____

Comments: _____

_____

WORK COMPLETED AND ACCEPTED (AB-83 completed)

Contractor Signature: _____ Date: _____

KANA OILFIELD SERVICES LTD.
SAMPLE PURCHASE ORDER

KANA OILFIELD SERVICES LTD.
General Oilfield Maintenance
PO Box 808, 4107 – 41st Street
Whitecourt AB T7S 1N8
Phone: (888) 778-2385
Fax: (780) 778-6569

PURCHASE ORDER
_____

DATE: _____
ISSUED BY:___
JOB No.: _____

QUANTITY	DESCRIPTION	PRICE	TOTAL

IMPORTANT	
OUR ORDER NUMBER MUST APPEAR ON INVOICES, PACKAGES AND CORRESPONDENCE. ACKNOWLEDGE IF UNABLE TO DELIVER BY DATE REQUIRED.	_____ _____

KANA OILFIELD SERVICES LTD.
EXAMPLES OF TYPICAL MARKINGS USED ON VALVES AND FITTINGS

For specific requirements, refer to Manufacturers Standardization Society Standard Practice, MSS-SP 25 and applicable ASME Standard (ASME B16.34, B16.5, B16.9, etc.). Fittings are sized according to their nominal pipe size.

1. FLANGES

EXAMPLE: A Size 4 ASME, Class 150 Carbon Steel (A105) Flange conforming to ASME B16.5-1996 dimensions.

Manufacturers Name or Trademark	XYZ Co.
Material Designation	A-105
Rating Designation	150 Sch. 40 or STD.
Size	4
ASME Standard	B-16.5

2. FITTINGS

EXAMPLE: A nominal size 4 Carbon Steel, Butt Welded Fitting Matching Schedule 40 Wall Thickness made from ASTM A-234 WPB Material and conforming to ASME B-16.9-1999.

Manufacturers Name	XYZ Co.
Material Designation	A-234 WPB or WPB
Rating Designation Sch.	40 or STD.
Size	4

3. VALVES

EXAMPLE: a Nominal Size 6, ASME B16.34-1996, Class 150, Cast Carbon Steel (ASTM A216 WCB Gate Valve.

	BODY	IDENTIFICATION PLATE
Manufacturers Name	XYZ Co.	XYZ Co.
Material Designation	WCB	WCB
Rating Designation	150	150 775F Max
Trim Identification (stem/disc/seat)		Cr13-Ct13-NICU
Size	6	6

EXAMPLE: A nominal size ¾ ASME B16.34-1996, Class 300, Forged Carbon Steel (ASTM A-105 Ball Valve with Stainless Steel & Teflon Trim.

	BODY	IDENTIFICATION PLATE
Manufacturers Name	XYZ Co.	XYZ Co.
Material Designation	A-105	A-105
Rating Designation	740 CWP	Body 740 WOG
Trim Identification (stem/disc/seats)		316-316-TFE
Size	3/4	3/4
Special Identification		Seats 200 @ 350 deg. F. Max. 500 WOG B16.34

COLOUR CODE FOR PIPE, FITTINGS AND FLANGES

Each pipe shall have continuous full length paint stripe as follows:

PIPE MATERIAL	COLOUR
SA/A106 Grade B	Light Blue
SA/A53 Grade B ERW	White
SA/A333 Grade 6 (Low Temp)	Flourescent Orange
FITTINGS AND FLANGE MATERIAL	
SA350 LF2	Flourescent Orange
SA420 WPL6	Flourescent Orange
SA105N	Light Blue
SA234 WPB	Light Blue

The QCM shall assign a colour code for materials other than those listed above. He/she shall inform the QC Inspector if the Owner's colour code is to be used instead. Pipe Materials in outdoor storage for extended periods may require re-coding in order for the materials to retain positive identification.

KANA OILFIELD SERVICES LTD.
QUALITY SYSTEM MANUAL

PRESSURE PIPING EXAMINATION AND INSPECTION SHEET

JOB NUMBER:

NO	FUNCTION	REFERENCE	SIGNATURE OR INITIAL AND DATE		
			Q.C. INSPECTOR	OWNER'S INSPECTOR	ABSA SCO (BOILER EXTERNAL PIPING)
1	DRAWINGS: ABSA registration over 0.5m3. Approved by Owner. Approved for construction, Repair or Alteration (signed & Dated).	**7.2, 7.3**			
2	ABSA safety Codes Officer and Owner's Inspector Notified.	**8.4, 9.3**			
3	Registered Welding Procedures, Q.C. Manual and forms available at site, Job file started.	**9.2 (a)** **9.3 (a)**			
4	Welders qualified for weld procedures and have valid Performance Qualification cards. Welders log completed. WPS reviewed with welders	**11.3**			
5	Material checked against P.O., drawings and specifications. Identification confirmed. Color-coding applied.	**8.3** **8.6**			
6	Sample of each welders work examined, including root spacing, Alignment, cleaning, joint preparation, preheat and electrode control.	**11.3 (f)**			
7	Nondestructive examination completed. Reports and radiographs Reviewed, signed by Level II or III, Radiograph I.D. detailed on Drawings.	**13.2**			
8	Visual examination of all completed welds. Welders I.D. stamped and/or recorded on drawings.	**11.3 (g)**			
9	Heat treatment verified and recorded on drawings.	**14.3**			
10	Each system checked against specifications and drawings before test.	**9.3 (d)** **9.3 (f)**			
11	All deficiencies recorded and signed off by Q.C.I. and Owner's Inspector before test.				
12	Pressure test checked. Gauge calibration verified, gauge # recorded.	**16.4/15.3**			
13	System checked after test. Deficiencies recorded and corrected. (Exhibit 16.2)	**16.4**			
14	Construction data reports prepared and signed by Q.C.I. and Owner's Inspector (and ABSA SCO for Boiler External Piping). (AB-83)	**9.3 (g)**			
15	Declaration form submitted to ABSA. (AB-81)	**9.3 (g)**			
16	As built drawings accepted by Owner.	**9.3 (h)**			

Hold Points indicated by an asterisk*

KANA OILFIELD SERVICES LTD.
QUALITY SYSTEM MANUAL

REPAIR OR ALTERATION EXAMINATION AND INSPECTION SHEET

Boiler or Pressure Vessel Title	Manufacturer and Serial Number	Alberta (A) No.

Indicate Hold Points Which are Applicable By * **Initail & Date**

Sequence	Operations	Comments	Repair or Alt. Org. Insp.	ABSA Hold Print	ABSA Safety Codes Officer	Owner's Hold Print	Owner Insp.
1	Repair or Alteration Procedure Accepted by ABSA Safety Codes Officer (and Owner's Inspector when applicable)						
2	Welding procedures Registered for welding to be done.						
3	Welders have valid Alberta P.Q. card for work to be done.						
4	Cracks Mag Particle/Dye check after removal						
5a	Materials to be used - checked against PO/Drawing						
5b	- material identified with correct SA/SB specifications						
5c	- material test reports checked against specifications						
6a	Fitup - shell courses – flush patches – heads						
6b	- tubesheet/shell/firetube						
6c	- nozzles and fittings						
7	Radiographic Examination						
8	Ultrasonic Examination/Mag. Part./Dye Pen.						
9	Internal Visual after Welding						
10	External Visual after Welding						
11	Heat Treatment						
12	Hardness Tests						
13	Hydrostatic Pressure Test	Gauge No.'s					
14	Alternative Test (Specify)						
15	Nonconformance Report No. Cleared						
16	Alberta Repair or Alteration Form AB-40 completed						
17	Repair or Alteration name plate attached.						

OUTLINE SKETCH

(Record Welder's Symbols and Heat No.'s, Radiograph I.D. No.'s)
Attach separate sketch if required.

MATERIAL USED IN REPAIR OR ALTERATION

Item	Mat'l Spec	Plate & Heads	Thickness	Sch	Rating
Shell/Patches					
Heads/End					
Tubesheet					
Firetube					
Nozzles					
Fittings					

KANA OILFIELD SERVICES LTD.
QUALITY SYSTEM MANUAL

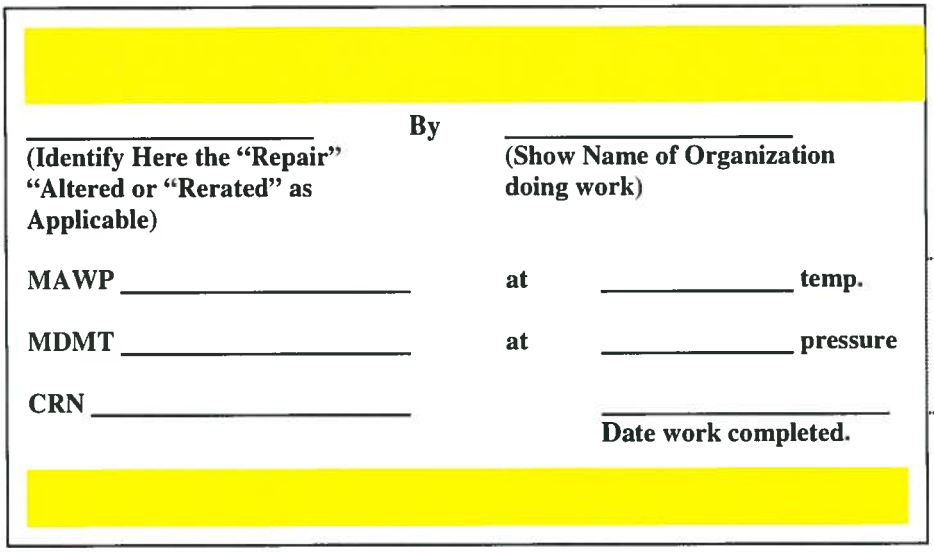
CODED MARKINGS

Material (Nozzles, Couplings Welding Attachements)	**Coded Markings**
SA 105	(5)
SA 350 LF2	(2)
SA 106 B	(6)
SA 333 Gr 6	(3)
SA 36	(4)

KANA OILFIELD SERVICES LTD.
QUALITY SYSTEM MANUAL

SAMPLE NAMEPLATE FOR REPAIRS AND ALTERATIONS

**(The following information must be shown when a nameplate is required.
This nameplate shell be applied adjacent to the original pressure vessel or boiler manufacturer's Stamping).**



NOTE: **Markings shall be produced by casting, etching, embossing, debossing, stamping or engraving. Letters and numbers must be at least 5/32" high.**

This Exhibit must be an exact facsimile or copy of the nameplate to be used by the repair or Alteration organization.

KANA OILFIELD SERVICES LTD

Box 808 4107-41 st. Whitecourt, AB
T7S 1N8

EXHIBIT # 9
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WELDERS LOG

NAME	PROCESS	FILE NO.	MATERIAL "P" No.	ELECTRODE "F" No.	POSITION (S) QUALIFIED	Maximum Deposited Weld Metal Thickness QUALIFIED	MINIMUM PIPE DIA. QUALIFIED	DATE OF EXP. ALTA P.Q CARD	WPS No.(s) USED	REVEIWED WELDING PROCEDURE	WELDERS SYMBOL

KANA OILFIELD SERVICES LTD.
QUALITY SYSTEM MANUAL

NONCONFORMITY REPORT	
JOB NUMBER:	NONCONFORMITY REPORT NO.:
SERIAL NUMBER/DWG. – LINE NUMBER:	
IDENTIFIACTION DETAILS:	
DESCRIPTION OF NONCONFORMITY:	
QCI/QCM SIGNATURE:	DATE:
Q.C. MANAGER APPROVAL:	DATE:
CLIENT/OWNER'S DESIGN APPROVAL:	DATE:
ABSA SCO APPROVAL:	DATE:
NONCONFORMITY RECTIFIED:	
Q.C. MANAGER APPROVAL:	DATE:
OWNER'S INSPECTOR APPROVAL:	DATE:
ABSA SCO APPROVAL:	DATE:

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HEAT TREATMENT FORM

HEAT TREATMENT FORM

JOB NO.	CUSTOMER:
DESCRIPTION:	
	DATE:

COMPONENT DESCRIPTION

DWG. NO. AND LINE NO.	DIAMETER	THICKNESS	MATERIAL	LENGTH	WEIGHT

TYPE OF HEAT TREATMENT:
INSTRUCTIONS: STRESS RELIEVE
1. Temperature to be raised from 800°F (426°C) to 1150°F (621°C) at a maximum rate of _____°F (° C) per hour. NOTE: MUST NOT EXCEED 400°F (222°C) PER HOUR. (Calculated rate = 400°F/h. Divided by governing metal thickness).
2. Temperature to be held at 1150°F (621°C) plus or minus 25°F (14°C) for _____minutes.
3. Temperature to be lowered from 1150°F (621°C) to 800°F (426°C) at a rate of _____°F (° C) per hour. NOTE: MUST NOT EXCEED 500°F (278°C) PER HOUR. (Calculated rate = 500°F/h. Divided by governing metal thickness).
4. **Additional requirements: Job number and description required on heat treatment chart.**
5. Furnace heat Number:
6. Furnace Operator's signature:
Q.C. Inspector's Signature: _____.

GUIDELINES FOR THE PREPARATION OF PNEUMATIC TESTING PROCEDURE

Due to the large energy storage in compressed gas and hence the potential hazard of a sudden release of this energy, pneumatic testing should be avoided if at all possible.

The testing procedure has to be submitted to the ABSA Design Survey Section for acceptance before any testing can be carried out. For piping less than or equal to 0.5 m3 further tests may be conducted utilizing an accepted standard procedure providing the test is within the same scope as the standard procedure and concurrence of the Owner is obtained prior to the test.

The testing procedure must be accompanied by detailed justifications why a standard hydrostatic test is not feasible.

In addition to strict adherence to the respective code sections (e.g. ASME Section VIII, Div. 1, Para. UG100, or ASME B31.3, Para. 345.5), the testing procedure should contain, as a minimum, the following information:

(1) Lists of all personnel within the testing area and designated personnel in charge of testing.
(2) Test boundaries of the pressure system with specified maximum pressure x volume (PV) limits, including listings of piping and/or equipment to be included in the test.
(3) Test site preparations and related precautions undertaken including removal of unauthorized personnel, isolation of test site, etc.
(4) Test media, pressure source and pressure and temperature ranges of testing.
(5) Provision of Safety Relief Valves which must be sized to handle the maximum output of the pressure source to avoid excessive testing pressure.
(6) Material specification involved in the test. For materials whose resistance to brittle fracture at low temperature has not been enhanced, test temperature above 60 deg. F. (16 deg. C) may be considered in reducing the risk of brittle fracture during pneumatic testing.
(7) Exposure of all joints including weld joints, threaded/flanged connections, etc. All post weld heat treatment shall be completed.
Should a piping system be tested, all equipment and pressure vessels shall be disconnected from the piping or isolated by blinds or other means.
(8) Method of testing with details of pressure steps, holding time inspection methods, etc.
(9) Precautions taken to prevent gas expansion temperature drop and thermal stresses due to temperature gradients.
(10) Reference should be made to the Canadian Registration Numbers (CRN) of the system/pressure vessels to be tested.

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PRESSURE TEST EXAMINATION GUIDE

PRESSURE TEST EXAMINATION GUIDE JOB NO.:	Q.C. INSP.
PRESSURE TEST PREPARATION	
1. All punch list items corrected.	
2. Test blinds correct thickness.	
3. All items which could be damaged by test isolated or removed (control valves, safety valves, instruments, expansion joints, etc.	
4. Equipment with internals (i.e. filters) that could be damaged, isolated as required.	
5. Vents and drains correctly installed.	
6. Open and closed position of all valves verified.	
7. Shipping bars in place – bellows.	
8. Hanger stops in place.	
PRESSURE TEST COMPLETED	
1. All temporary blinds (blanks) removed.	
2. Temporary gaskets changed for correct gaskets.	
3. Temporary supports removed.	
4. Shipping bars removed from bellows.	
5. Spring hanger stops removed – cold setting checked.	
6. Safety valves – correct ASME Code Symbol and correct set pressure and capacity installed.	
7. Safety valve vents are correct size – adequately supported – drain holes and or weather hoods installed.	
8. Screens for pumps and compressors installed (initial start up and permanent screens).	

Q.C. Inspector Signature: _____ **Date:**

HYDROSTATIC TEST REPORT

Date_____

Job Number_____

Customer_____

Description of Product_____

_____

Test Conducted By_____

Test Pressure_____

Test Medium_____

Test Medium Temperature_____

Holding Time at Test Pressure_____

Adverse Conditions Affecting Test_____

_____

Results_____

Authorized Inspector Witnessing Test_____

Comments_____

_____

_____

Recorder_____

Gauge_____

Deadweight_____

Signature of Quality Control Inspector_____

KANA OILFIELD SERVICES LTD.

NDE CONTRACTOR APPROVAL FROM

DATE : _____

COMPANY NAME : _____

ADDRESS : _____

_____

_____

_____

LEVEL III EXAMINER ON STAFF **YES** ☐ **NO** ☐

NAME _____ **REG NO.** _____

DOES CONTRACTOR HAVE A QUALITY ASSURANCE PROGRAM IN ACCORDANCE WITH SNT-TC-1A ? **YES** ☐ **NO** ☐

CGSB CERTIFICATION ? **YES** ☐ **NO** ☐

NDE CONTRACTOR APPROVED ? **YES** ☐ **NO** ☐

SIGNATURE OF NDE CONTRACTOR: _____

SIGNATURE OF QUALITY CONTROL MANAGER: _____