

**Name:** **Gordon Allen Aaker, Jr. P.E.**

**Position:** Metallurgical Engineering Consultant

**Education:** Bachelor of Science in Metallurgical Engineering, University of Texas, El Paso, Texas, 1977

**Affiliations:**

*Past and Present*

ASNT – American Society of Non Destructive Testing, Secretary and Education Chairman

ASM- American Society of Metals

ASTM - American Society of Testing Materials

SSPC - The Society for Protective Coatings

ASME - American Society of Mechanical Engineers

NACE - National Society of Corrosion Engineers

AWS - American Welding Society, Education Chairman

Odessa College Advisory Committee on Nondestructive Testing

Odessa College Advisory Committee on Welding

**Experience** **B. S. in Metallurgical Engineering and Registered Professional Engineer**

**Summary:** Thirty-one years of experience as an engineering consultant, specializing in **failure analysis, selection, welding, and corrosion control of materials** unique to the oil / gas and petrochemical industry. Principal business activities include: (1) providing engineering support on oil/gas project for major oil companies and, (2) litigation support as an engineering consultant or expert witness to insurance companies.

**Consulting in:** Recognized authority in design and construction codes for onshore and offshore projects including oil and gas facilities, petrochemical refineries, process equipment and pipelines projects. Perform failure analysis; establish material, welding, nondestructive testing and corrosion control (Cathodic Protection and Coating) requirements for oil and gas projects, fatigue testing of SCR's for deepwater projects.

Corrosion rate calculations for CO2 corrosion; inhibition selection, testing and corrosion monitoring; sour gas effects and corrosion control;

Recognized authority in welding and NDE inspection methods, including mechanized ultrasonic inspection. SCR's, Infield, export and flexible pipelines, deepwater subsea projects; Material selection specifications/reports. transportation of wet and dry gas, condensate, injection water; use of carbon steel, nickel alloy, stainless steel clad or organic lined linepipe; steel selection for SCC/HIC control; Use of NACE standards; NDT surveys; cathodic protection design incl structures, coating / insulation selection, automated NDE evaluation, Cathodic protection design of pipelines and structures.

Vendor document review, contractor selection, pre-production meetings, familiar with all International codes/standards; vendor bid evaluation; technical auditing; preparation of corporate/project standards/specifications, procedures, and design practices. Development of steel specifications and purchasing

support, PWHT /NDE procedures. Composite/elastomer evaluation, welding process evaluation/procedure development & review, Worldwide Steel Mill Audits

Recommendations for preventative maintenance. Engineering Critical Assessments (ECA) of pipelines and offshore structures. Providing technical expertise in non-destructive / mechanical testing and PWHT.

Performed research and development in material applications, welding, and advance NDE methods including metallurgically bonded pipe and fittings. Project Manager for individual research projects concerned with advances in welding technology including fabrication of corrosion resistant alloys and offshore installation Experienced in the design and Construction Management of metallurgical bonded pipe, overlays and claddings for sub sea systems. Preparation of corporate/project standards/specifications, procedures, and design practice

**Provided worldwide pipe, plate, and tubing mill audits**, domestically and internationally. Including welded pipe from coils using a reduction mill. Preparation of Steel Specifications and Mill Audits in many of World's pipe mills and overseas forging shops; Extensive experience in Failure Analysis, Fracture Mechanics and life cycle costing;

Testified at the United States International Trade Commission Hearings regarding the restricting of imported pipe and the effects on develop of deepwater production.

Testified for the Department of Justice, Environmental Enforcement Division on pipeline failures.

**Contributing author** in "Failure Analysis Handbook" published by the American Society of Metals.

Author and co-author of technical papers presented at OTC and at other International Pipeline Conferences.

Taught in industry and at the University level.

Held elected offices in various Professional Societies.

<b>Engineering Services, LP, 1989 to Present</b>
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Owner and president of Engineering Services, LP. Consultant specializing in engineering design and construction codes for oil and gas facilities, petrochemical refineries, and process equipment and pipelines projects. Providing Metallurgical engineering and project management support while serving as the client's representative.

Recent projects include:

2004 Engineering Consultant	Chevron BlindFaith Project
2001 Engineering Consultant	BP Thunder Horse Project
2003 Engineering Consultant	Modec CNC FPSO
2001 Engineering Consultant	Devils Tower Project
2000 Engineering Consultant	Williams Boomvang

1999	Engineering Consultant	BP Nile Project
1998	Engineering Consultant	Hess Penn State
1997	Engineering Consultant	BP Troika
1996	Engineering Consultant	ENSERCH Garden Banks 254
1995	Engineering Consultant	MOBIL Green Canyon 60
1996	Engineering Consultant	FLEXTREND Ewing Banks 914
1996	Engineering Consultant	ENSERCH Garden Banks 387
1993	Engineering Consultant	AGIP Grand Isle 102
1992	Engineering Consultant	ENSERCH Garden Banks 388
1991	Engineering Consultant	ENSERCH Mississippi Canyon 441

#### **Brown & Root, Inc., 2000 to 2004**

Consultant- Provided a complete review of all the material selection criteria used for the selection of materials for the Hassi-Berkine Pipeline and Gathering System Project in Africa, a joint venture between Italian Oil Company and Anadarko Petroleum. Resolved technical differences between the client and Brown & Root, Inc., regarding material, fabrication, and inspection during installation. . Developed a complete pipeline corrosion protection system (Cathodic Protection) for all three phases of the project.

#### **R J Brown Deepwater (Technip Company), 1999 to present**

Consultant- Write, edit and review material , welding and construction specifications for projects installed in the Gulf of Mexico. Performed audits of pipe mills, perform bid evaluation and provided recommendations to control corrosion and Quality Assurance audits of fabricators to assure quality of construction. Provided failure analysis of materials and coatings systems and construction management support during fabrication of pipeline, sleds and related components.

#### **RJ Brown (Kvaerner Company), 1991 to 1999**

Consultant- Write, edit and review material, welding, and construction specifications for pipeline installed in the Gulf of Mexico. Perform audits of pipe mills, perform bid evaluation and provide recommendations to control corrosion. Provided failure analysis of materials and coatings system. Performed Quality Assurance audits of fabricators to assure quality of construction. Provided construction management support during fabrication of pipeline, sleds and related components. Developed procedures for autogenously welded duplex tubing on the Mississippi Canyon 441 project.

#### **Enserch Exploration Inc., 1991 to 1996**

Consultant- Provided metallurgical and construction support in the design and fabrication of the sub sea template, trees, free standing riser and SWF on MC441 and GB387. Provided technical and administrative assistance as the assistant Pipeline Manager on MC441, GB387 and GB388 pipelines. Represented Enserch at the offices' of the engineering and construction subcontractors, providing engineering surveillance and metallurgical support. Provided total surveillance responsibility of pipe mills during production at Lone Star steel and Dalmine (Italy), beginning with technical evaluation of the bid and negotiation of the technical requirements at preproduction meetings.

**Flextrend Development, 1995 to 2000**

Consultant- Provided total surveillance responsibility of pipe mills during production, beginning with technical evaluation of the bid and negotiation of the technical requirements at reproduction meetings. Provided metallurgical assistance to resolve problems in the manufacturing of sub sea trees.

**Kvaerner FSSL, 1995 to 2000**

Consultant- Provided material selection, fabrication and welding assistance for termination sleds for the Shell Mensca project. Provided solutions to fabrication problems and performed failure analysis of duplex umbilical provided for Mobil's Green Canyon 60.

**CBS Engineering, 1995 to present (Technip Company)**

Consultant- Provided a CO<sub>2</sub> pipeline corrosion model for the Qatar Pipeline Project to estimate the anticipated corrosion rate. Developed a material selection Guide for materials used in H<sub>2</sub>S service. Provided support in fabrication, construction & construction material, inspection, and testing.

**Kvaerner Energy, 1996**

Consultant- Provided solution to welding and fabrication problems with duplex umbilical tubing used on the Mobil Green Canyon 60 Project.

**Sonsub, Inc., 1994 to present**

Consultant- Provided engineering design and construction assistance on DOT projects and offshore projects, including design, fabrication, inspection welding and material selection. Wrote material and construction specification for numerous onshore and offshore projects.

Responsible for the material used in the BP Troika production riser including specifying the pipe , mill audits and mill surveillance during pipe production in Mexico and Argentina.

**Stone and Webster Engineering Corporation, 1988 to 1993**

Consultant- Performed material selection and review welding specification for Vista Chemical's ethylene plant expansion in Lake Charles, Louisiana.

**Vista Chemical Company, 1993 to 2002**

Consultant - Performed studies in corrosion control and edited engineering design and construction specifications. Provided litigation support. Continue to provide Metallurgical support as required.

**Petrochem Field Services, Inc., 1990 to 1998**

Consultant- Provided engineering design and construction management support for turn arounds performed at Mobil - Torrance, Mobil - Joliet, Mobil - Chalmette, Mobil - Beaumont, Mobil - Paulsboro, CITGO - Houston, Enterprise Product - Mt Blewue, Unocal - Rodeo Ca., Exxon - Baytown, Texaco - Long Beach, Ca., Dupont - Orange, Tex., Chevron- Richmond, Ca. Developed emergency repair procedures for process equipment, including engineering requirements and fabrication methods.

**Aaker Metallurgical Associates, 1986 to 1989*****Principal/Metallurgical Consultant***

Consultant in engineering design and construction codes. Performed metallurgical failure analysis and useful life studies. Develop welding procedures and NDE specifications. Established "Written Practice" for training, testing, and certification of Non-Destructive Examination personnel. Provide inspection services as an extension of owner's project management team.

**Stone and Webster Engineering Corporation, 4/88**

Consultant- Performed a Corrosion Survey in Egypt for GUPCO. Recommendations included material selection, design and fabrication techniques to control corrosion in pipeline and related facilities, onshore and offshore.

**Brown & Root International, Inc., Marine Division, 3/85 to 5/86*****Senior Metallurgical Engineering Consultant***

Provided metallurgical engineering support in the design and construction of the Exxon Santa Ynes project. Research and Development in advanced welding technology, improved pipeline welding methods and material evaluation.

**SIVALLS, INC., 1/78 to 3/85*****Metallurgical/Project Engineer***

Reviewed customer's process equipment specification for metallurgical consideration (i.e., testing, welding, materials, and coating systems). Developed welding specification for ferrous and non-ferrous materials. Develop NDE specifications. Establish quality control system in adherence to ASME Code for the design, fabrication, testing, and inspection of code equipment.

**UNIVERSITY of TEXAS of THE PERMIAN BASIN (Part-Time), 1/78 to 5/83*****Instructor***

Taught accredited evening courses in Metallurgy, Mechanics of Materials, and Thermodynamics.

**Odessa College (part-time), 1/78 to 5/83*****Instructor***

Taught Adult Continuing Education courses for AWS and ASNT. Courses included: Welding Metallurgy, Hardenability of Steel, AWS Inspector Certification, Mechanics of Testing, and Ultrasonics.