

June 29, 1979

TESTIMONY OF W. J. FERGUSON

SUBJECT: SKAGIT NUCLEAR PROJECT QUALITY ASSURANCE

My name is Warren J. Ferguson. I hold the office of Vice President, Engineering and Construction, and report directly to the President and Chief Executive Officer of Puget Sound Power and Light Company.

This testimony is offered in response to the Licensing Board's request posed during the April 24, 1979, prehearing conference in Seattle, Washington.

My responsibilities at Puget Power include executive direction of the Company's engineering, quality assurance, and construction project organizations.

I have 27 years in nuclear plant systems work. This experience involves significant periods of time in inspection, pre-operational testing, and operation of nuclear equipment and systems. I began as a test engineer with General Electric in Schenectady, New York, inspecting and testing naval nuclear propulsion systems, and later moved to the Hanford Project, where I spent 15 years in nuclear plant construction and operation. In 1967 I left Hanford and became Vice President and General Manager of United Nuclear Corporation, Naval Products Division, where for six years I

was responsible for the manufacturing process, quality assurance, fabrication, and assembly of fuel and reactors for the nuclear navy.

The Skagit Nuclear Project, Quality Assurance, and Generating Plant Engineering Departments report directly to me. I also have the responsibility to coordinate inputs and services of all Company organizations supporting the Skagit Nuclear Project, including Records and Purchasing, which report to the Vice President, Administration, and Nuclear Plant Operations and Nuclear Fuels, which report to the Vice President, Power Supply (see Figure 1).

The Quality Assurance Department is separate from the Skagit Nuclear Project and Generating Plant Engineering and the other service groups that report to me. As such, it retains complete autonomy and objectivity in administering the Skagit Nuclear Project Quality Assurance program. The Manager Quality Assurance has unilateral stop work authority and has direct access to the President if required to resolve conflicts. Puget Power's quality assurance policies and procedures are detailed in our Quality Assurance Manual. Responsibilities are clearly defined in job descriptions, including specific authorities. For example, the position description for the Manager Quality Assurance cites both the position's stop work authority and direct access to the President for communication on quality assurance subjects.

I review the effectiveness of Puget's Quality Assurance program through personal inspection of facilities, equipment, and records and maintain frequent contact with the Bechtel engineering, procurement, and quality assurance personnel. In addition to my personal overview, I have initiated a program of third party audits and evaluations of Puget Power's Quality Assurance Program.

Mr. E. Victor Padgett, Jr., Puget Power's Manager Quality Assurance from September 1973 to May 1979, was promoted May 1, 1979 to another position within the Company. Until a replacement for Mr. Padgett is selected, Mr. Hettinger, our Quality Assurance Specialist, has been named Acting Manager Quality Assurance, reporting directly to me. Mr. Hettinger is qualified to perform as Manager Quality Assurance and meets Puget's experience requirements as committed in Chapter 17 of our PSAR. In addition to Mr. Hettinger, our Quality Assurance staff currently includes a Quality Assurance Auditor.

Bechtel was contracted by Puget Power to provide architect engineering, procurement, and Quality Assurance/Quality Control services for the design and procurement phase of the project. The interface with Bechtel on the project is through our Director, Skagit Nuclear Project. Puget Power's interface with Bechtel concerning Quality Assurance procedures and audit activities is between our

Manager Quality Assurance and Bechtel's Project Quality Assurance Engineer. Bechtel has been assigned the task to perform Quality Assurance surveillance and auditing functions on the NSSS.

Although Bechtel has primary responsibility for the required independent review of design and procurement documents, Puget Power also performs an overview. This overview consists of review and approval of designated Bechtel design and procurement documents by the Skagit Nuclear Project, Generating Plant Engineering, Purchasing, and Quality Assurance. Through this process we are involved and have a direct influence on the work of Bechtel and other contractors, to assure that they are responsive to our corporate commitment to design, build, maintain, and operate the Skagit Project in a safe, reliable, and efficient manner.

Bechtel also has been assigned to provide construction management and Quality Assurance/Quality Control services during construction. Our quality program is structured on the basis that the contractors, who perform the work, are responsible for the quality of their work. We require our Construction Contractors to have a first line inspection system that is capable of effectively evaluating the acceptability of work as it progresses and an effective corrective action system when deficiencies are detected. For this reason, we have given considerable attention to assuring

that only qualified contractors are selected to perform the work and that each contractor performing safety-related activities at the site has a Quality Assurance/Quality Control Program that meets the requirements of 10CFR50, Appendix B, and ANSI N45.2.

I will now describe the Quality Assurance organization as I envision it will be during construction. (See Figure 2.) Later, I will explain how the staffing will proceed for the construction phase.

The Manager Quality Assurance will be responsible for directing the development, administration, and implementation of the overall Quality Assurance Program. The Manager Quality Assurance will also evaluate the effectiveness of the existing programs through feedback from the Audit Section and the Site QA/QC Manager. The Puget Power Quality Assurance Organization will be responsible for coordinating the overall quality assurance effort and for monitoring Bechtel, the Construction Contractors, and the various Puget Power organizations that support the Skagit Project.

In addition to the Manager Quality Assurance, the corporate headquarters' Quality Assurance staff will include the Quality Assurance Specialist and the Audits Section. The Quality Assurance Specialist will report to the Manager Quality Assurance and be responsible for providing adminis-

trative assistance; maintaining the Corporate Quality Assurance Manual; developing necessary procedures; Quality Assurance indoctrination at the corporate level; and 10CFR50.55(e) and Part 21 evaluations.

The individual auditors in the Audits Section will report to the Manager Quality Assurance and be responsible for routinely performing detailed procedural audits of Puget Power, including Site Construction; Bechtel; and major contractors, to verify compliance with their procedure and regulatory requirements. Audits will be performed in accordance with ANSI N45.2.12. Site QA/QC discipline engineers will also assist during on-site audits conducted by the Audit Section.

The Site QA/QC Manager will report to the Manager Quality Assurance and will be responsible for planning, directing and implementing the Puget Power QA/QC activities at the construction site. The Site QA/QC Manager will also maintain liaison with Puget Power's Site Senior Construction Engineer, who is part of the Skagit Nuclear Project. Puget Power's Quality Assurance/Quality Control activities at the Construction Site will be in addition to and independent of Bechtel's Quality Assurance/Quality Control activities. The Site QA/QC organization will include personnel who will be responsible for QA Records Control, Vendor and Material

Control, Site QA Systems, and NDE Evaluation as shown in Figure 2.

I consider that an independent surveillance system is essential if we are to effectively exercise our responsibilities to assure that the Construction Contractors and Bechtel are properly carrying out their responsibilities during construction. For that reason, our Site Quality Assurance/Quality Control organization will be staffed by various engineering disciplines as shown in Figure 2. They will be required to review the documentation relating to their discipline, including specifications, contractor procedures, field drawings, Field Change Requests, and Change Orders. During construction, Nonconformance Reports will normally be issued by Bechtel and/or the various Construction Contractors, but may also be issued by Puget Power. All Nonconformance Reports and Corrective Action Requests will be reviewed by Puget Power's site QA/QC organization.

Planned and documented surveillance will be performed by the discipline engineers in their areas of expertise. In addition to monitoring the work, the Construction Contractors' ability to effectively perform the work from a quality standpoint will be reviewed, as well as the contractor's first line inspection system. Where feasible, inspections by Puget Power's personnel will be performed after the Con-

struction Contractors' work has been accepted by first line inspection. Thus the Construction Contractors' inspection capability will also be evaluated. Surveillance will also be aimed at evaluating Bechtel's second line inspection of the Construction Contractors' work.

When we receive an LWA, I plan to promptly add the Quality Assurance Specialist, Site QA/QC Manager, Site Quality Assurance Systems Engineer and a Civil Engineer certified as a Level II Inspector for concrete. Quality Assurance Records Control, and Vendor and Material Control personnel will be added prior to the arrival of Quality Assurance records and/or material at the site. The various engineering disciplines and an NDE engineer will be added prior to the start of construction work in those disciplines. Prior to pre-operational testing, Quality Assurance Engineers will be assigned to provide surveillance of startup testing. Our planned Quality Assurance organization, when construction is at its peak, is indicated on Figure 2.

In regard to the availability of experienced quality assurance personnel for the construction build-up, I can say that interest in the Skagit Project, and the region, is high. We will have no difficulty in attracting capable people, once the Project is underway. As to my recruiting philosophy, I look for proven performance on work of similar scope. In this case we will require direct site-related

nuclear quality assurance experience. When appropriate, I have also assigned personnel to other utilities' projects to enhance their qualifications and to obtain the experience we need in specific aspects of design and construction. I intend to continue this approach in staffing the Site QA/QC organization.

Our Quality Assurance Program requires that appropriate indoctrination and training be provided for all personnel connected with the project, including Construction Contractors' personnel. Each organization is responsible for training their personnel and assuring they are adequately qualified to satisfactorily perform their duties. Inspection and test personnel will be certified as specified by ANSI N45.2.6. Nondestructive Examination (NDE) personnel will be certified to the requirements of SNT-TC-1A. Personnel performing special processes such as welding, heat treatment, and hydro testing will be qualified to procedures approved by Bechtel. Our Quality Assurance organization will provide surveillance and audits of these organizations to assure that the various training programs are properly implemented.

To facilitate the Board's inquiry into Puget Power's Quality Assurance Program, both Mr. Padgett, the former Manager Quality Assurance, and Mr. Hettinger, the Acting Manager Quality Assurance, have provided prefiled testimony

and will be available, along with Mr. Ellis and myself, to answer the Board's questions.

852 017

PUGET POWER
ORGANIZATION CHART

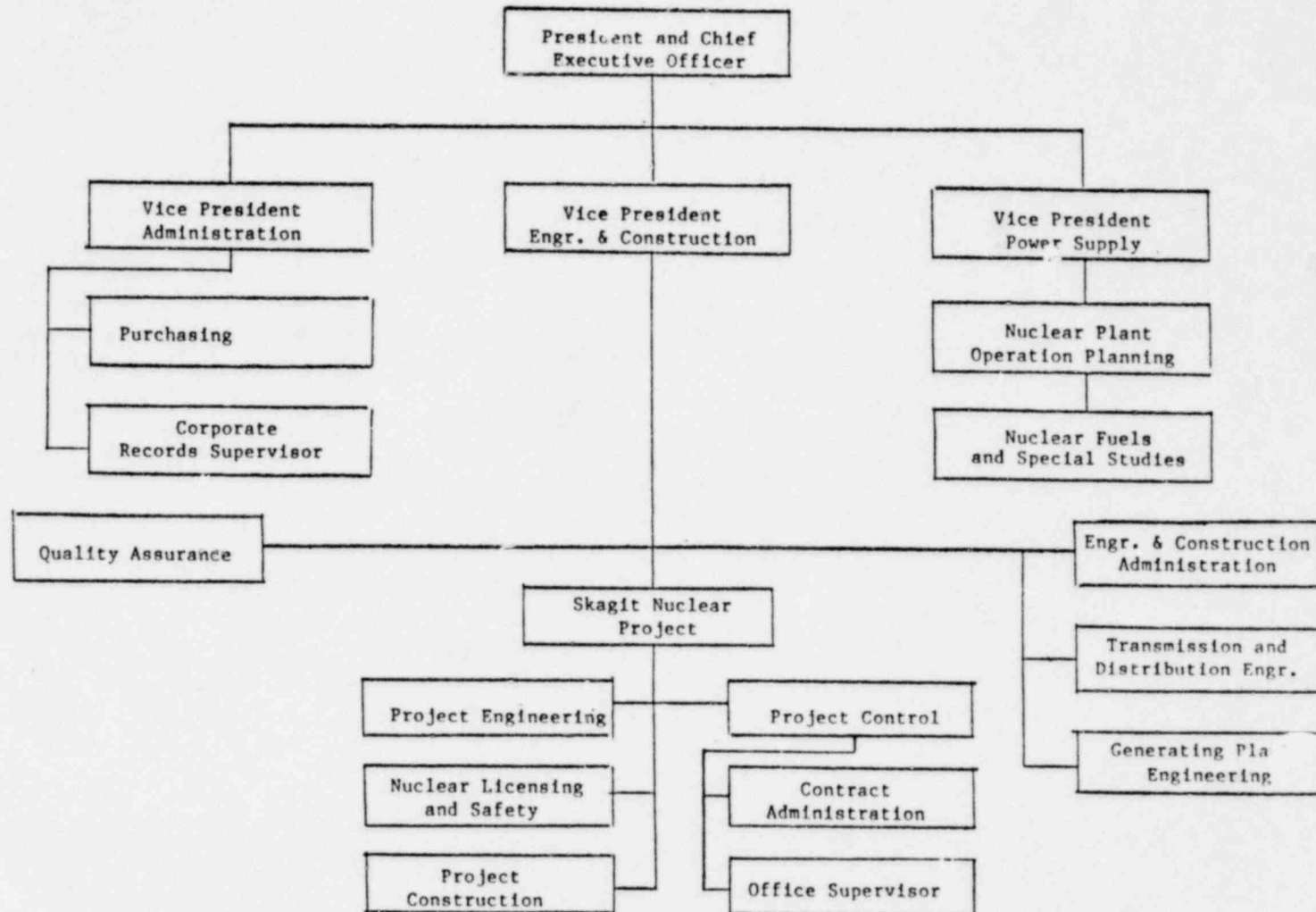
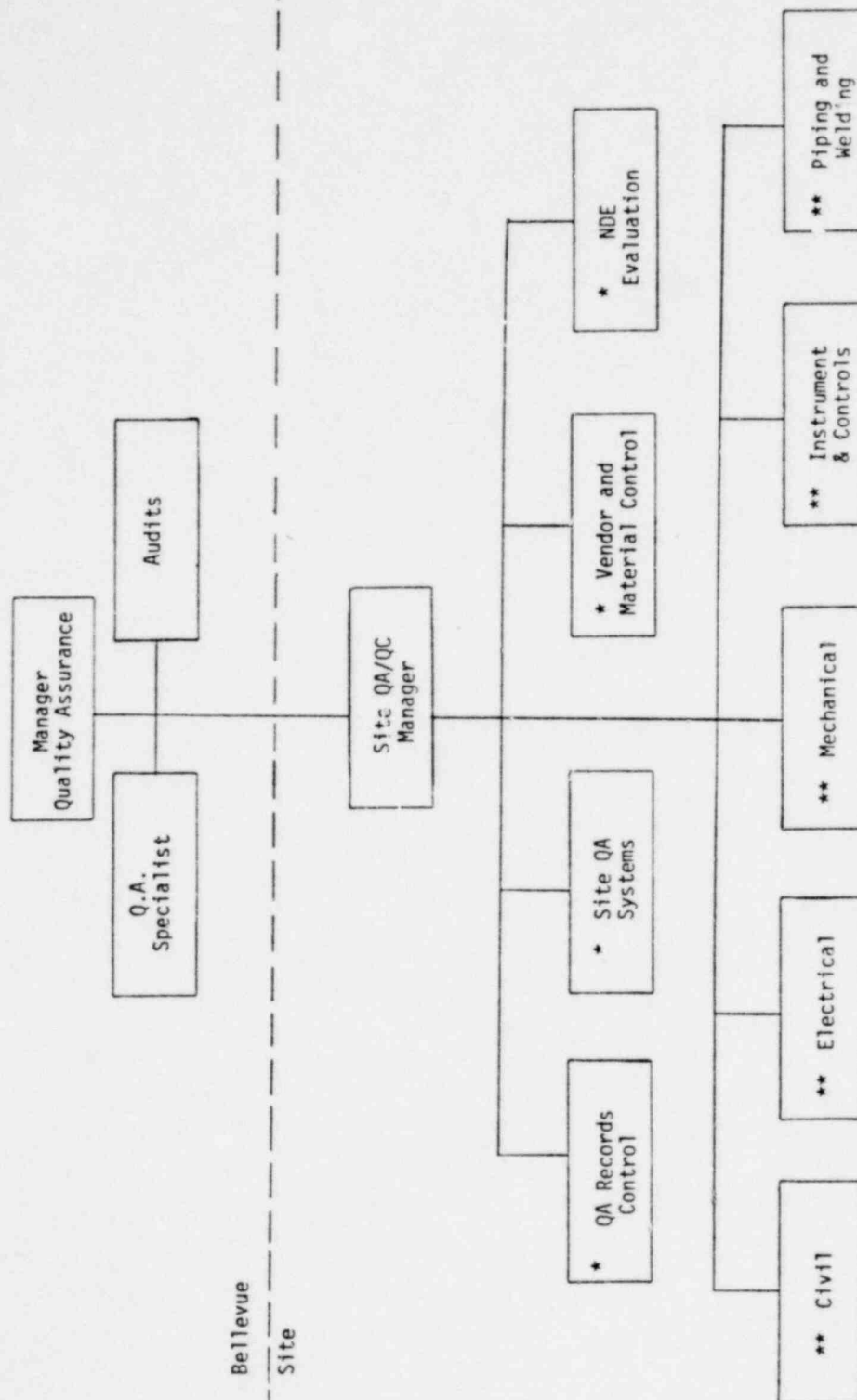


Figure 1

852 018



QUALITY ASSURANCE ORGANIZATION
FOR
SKAGIT NUCLEAR PROJECT

* See Figure 3 for detailed breakdown.

** See Figure 4 for detailed breakdown.

Figure 2

852 019

QA Records
Control

Site Records
Surveillance

Records Turnover
and Retention

Microfilm and
Computer Control

Site QA
Systems

Construction
QC Procedures

Site Systems
Surveillance

Deficiency and
Trend Analysis

Startup Surveillance
Program

QA Training and
Qualification

Vendor and
Material Control

Vendor Surveillance

Source Inspection

Receiving and
Storage Surveillance

Spare Parts
Storage Control

Purchase Order
Review (Puget)

NDE
Evaluation

NDT Surveillance

Film Interpretation

Procedure Preparation
& Review (Puget)

Calibration Control

Inservice Inspection
Program

852 020

SITE QUALITY ASSURANCE ENGINEERING
SURVEILLANCE AND FUNCTIONS
SKAGIT NUCLEAR PROJECT

Civil	Electrical	Mechanical	I & C	Welding
Civil Insp.	Electrical Insp.	Mechanical Insp.	I & C Insp.	Piping Inspection
Materials Labs	Component Insp.	Equipment Installation	Rad. Monitoring	Welder Qualifications
Vendor Qual.	Component Qual.	Equipment Qualification	Intrusion Alarm	Weld Procedures
Cadweld Certs.		New Fuel Insp.	PGCC Nuclenet	Material Control
Documentation				Process Control

ALL DISCIPLINES

Provide audit assistance

Review NCRs & CARs in area of discipline

SITE QUALITY CONTROL
SURVEILLANCE ACTIVITIES FOR
SKAGIT NUCLEAR PROJECT

852 021