

LIST OF SYSTEM INSTALLATIONS

**CONTROL DATA CORPORATION
ANALOG-DIGITAL SYSTEMS DIVISION**

February 1968

POWER (FOSSIL AND NUCLEAR FUELED)

Louisiana Power & Light Company, Sterlington Steam Electric Station

Installation Date: March 1958

Computer Type: Model 46

System Functions: On-line data logging, alarm scanning, performance calculations, and closed-loop direct digital control of stator oil and hydrogen temperatures.

Carolina Power and Light Company, H. B. Robinson Plant, Unit 1

Installation Date: March 1960

Computer Type: Model 46

System Functions: On-line logging, alarm scanning, and periodic performance and efficiency calculations. The system has been used extensively to improve measurement techniques and to study plant dynamics.

Gulf States Utilities Company, Willow Glen Station, Units 1 and 2

Installation Date: March 1960 (Unit 1), July 1963 (Unit 2)

Computer Type: Model 46

System Functions: Alarm scanning, data logging, and performance calculations.

Louisiana Power & Light Company, Little Gypsy Steam Electric Station, Unit 1

Installation Date: November 1960

Computer Type: Model 46

System Functions: Alarm scanning, data logging, periodic performance and efficiency calculations, and closed loop control. (The Little Gypsy installation represents the world's first fully automated steam electric station. The system has been operating on line in conjunction with an all-solid-state Control Data analog control system since early 1961.)

Kansas Gas & Electric Company, Gordon Evans Station, Units 1 and 2

Installation Date: March 1961 (Unit 1), December 1964 (Unit 2)

Computer Type: Model 46

System Functions: Scanning, logging, and alarming operations.

Duquesne Light Company, Shippingport Atomic Power Plant

Installation Date: March 1961

Computer Type: Model 46

System Functions: Data collection, processing, and alarming for the world's first atomic power plant.

Carolina Power & Light Company, H. F. Lee Steam Electric Station

Installation Date: April 1962

Computer Type: Model 136

System Functions: The combined digital/analog computer system is designed to start, run, and stop the complete power station without operator intervention.

General Electric, Knolls Atomic Power Laboratory

The classified nature of this project prohibits any description.

Atomic Energy of Canada Limited, Douglas Point Atomic Power Plant

Installation Date: February 1964

Computer Type: Model 636

System Functions: Complete digital control of major loops in the reactor and turbine system of the power plant. Scans analog and digital signals from the plant; provides logging, alarming, and digital control signal outputs

Fluor Corporation Ltd., National Reactor Testing Station

Installation Date: October 1964

Computer Type: Model 636

System Functions: Monitors and alarms variables for the AEC's Advanced Test Reactor at Idaho Falls; computes lobe power, stack gas flow, radioactive gas release, xenon inventory, xenon over-ride time, and surface heat flux.

Louisiana Power & Light Company, Little Gypsy Steam Electric Station, Unit 2

Installation Date: July 1965

Computer Type: Model 636

System Functions: Complete control of the power generating plant from startup to shutdown. (Digital computer with analog backup system.)

Houston Lighting & Power Company, Bacliff Steam Electric Station, Units 1 and 2 - -
450 mw each

Installation Date: March 1966 (Unit 1), March 1967 (Unit 2)

Computer Type: Model 636

System Functions: On-line monitoring, alarm scanning, data logging, and complete performance calculations.

Texas Electric Service Company, Morgan Creek Station - - 500 mw

Installation Date: May 1966

Computer Type: Model 636

System Functions: On-line monitoring, alarm scanning, data logging, and complete performance calculations

Interstate Power Company, Beaver Channel - - 200 mw

Installation Date: June 1966

Computer Type: Model 636

System Functions: On-line scanning, alarming, and logging for the entire boiler-turbine-generator complex.

New Orleans Public Service, Inc., Michoud Steam Electric Station, Unit 3 - - 550 mw

Installation Date: February 1967

Computer Type: Model 636

System Functions: On-line monitoring, alarm scanning, data logging, sequential trip monitoring, and complete performance calculations. Control functions are direct digital control (DDC) of hydrogen, lube oil, and stator coolant temperature plus DDC of major loops (feedwater, combustion, and steam temperature).

Union Carbide Corporation, Oak Ridge

Installation Date: August 1967

Computer Type: Model 1700

System Description: Nuclear research and test system for on-line data acquisition and control of the High-Flux Isotope Reactor at Oak Ridge National Laboratory. The system functions include reactivity control (automatic shim withdrawal permit, and burnup and history calculations); rod symmetry control; annunciator scanning (sequence determination and alarm logging); and optimum power recovery profile.

Northern States Power Company, Allen S. King Generating Plant, Unit 1 - - 500 mw

Installation Date: September 1967

Computer Type: Model 1700

System Functions: Performs scanning, alarming, logging, performance calculations, operator guides, and subloop control. Operator guides are included for turbine startup, circulating water system, and boiler feed pump. Subloop control of the boiler feed pump turbine is included.

Louisiana Power & Light Company, 1969 Extension - - 550 mw

Installation Date: August 1968

Computer Type: Model 636

System Functions: On-line monitoring and results computer system performs alarm scanning, data logging, sequential trip monitoring, and complete performance calculations. Control functions are direct digital control (DDC) of hydrogen, lube oil, and stator coolant temperature plus DDC of major loops (feedwater, combustion, and steam temperature).

METALS

Great Lakes Steel, Division of National Steel Corporation

Installation Date: September 1961

Computer Type: Model 136

System Functions: Computer control of an 80-inch hot strip mill. The system provides control for screwdown, edgers, speed, sideguides, cooling sprays, etc. , and extensive logging and alarm presentation.

Bethlehem Steel Company, Sparrows Point Plant

Installation Date: February 1965

Computer Type: Model 636

System Functions: The computer control system for a 56-inch hot strip mill tracks slabs through the entire mill, and provides signals for settings to an automatic gage control system for presetting and resetting mill stand screw settings and for presetting mill motor speeds on the finishing mill stands.

Taylor/U. S. Steel Continuous Casting Facility, Gary

Installation Date: December 1965

Computer Type: Model 636

System Functions: On-line control of cooling water flow for a large, single-strand, continuous-casting plant.

Taylor/Bechtel/Hanna Mining, Ore Benefication and Pelletizing Plant, Hibbing

Installation Date: July 1966

Computer Type: Model 636

System Functions: On-line monitoring and results computer system performs alarm scanning, data logging, preventive maintenance scheduling, and complete performance calculations.

Chrysler Corporation, Indianapolis Foundry

Installation Date: Fall 1966
Computer Type: Model 636
System Functions: Optimization of charging and melting process.

Major Aluminum Company

Installation Date: June 1967
Computer Type: Model 1700
System Functions: Control of pot line reduction process.

Major Aluminum Company

Installation Date: August 1967
Computer Type: Model 1700
System Functions: Control of pot line reduction process.

Major Aluminum Company

Installation Date: August 1967
Computer Type: Model 1700
System Functions: Research system.

CHEMICAL AND PETROCHEMICAL

Clark Oil Company, Blue Island Refinery

Installation Date: August 1961

Computer Type: Model 46

System Functions: Data collection and material balance programs are in operation with closed-loop control of various refinery facilities.

Union Carbide Olefins Company, Ethylene Plant

Installation Date: September 1961

Computer Type: Model 46

System Functions: Data collection, processing, alarming, and logging using information from analog and digital inputs.

Union Carbide Caribe, Inc.

Installation Date: December 1964

Computer Type: Model 636

System Functions: Data collection, processing, alarming, and logging.

Union Carbide Corporation, Seadrift

Installation Date: June 1966

Computer Type: Multicomputer system involving Models 3200 and 1700, and the Model 46 which was installed in September 1961.

System Functions:

Control and optimizing of process.

This system, involving three different computers, integrated both through hardware and software, provides the basic functions of process monitoring, data acquisition and control, and concurrently provides advanced supervisory control, interunit optimization, and plant management information. System reliability and availability approach today's standards. Programming for all processes of the complex is performed in FORTRAN, on-line, without description of the process control functions. The integrated computer system includes the CONTROL DATA Model 046 Computer and the CONTROL DATA Model 1700 Computer as the process monitor and control subsystems. The CONTROL DATA 3200 is the optimization computation processor.

International Minerals & Chemical Corporation, Bartow

Installation Date:

June 1966

Computer Type:

Model 1700

System Functions:

Data collection, alarming, logging, and process control

Union Carbide Corporation, Linde Division

Installation Date:

August 1967

Computer Type:

Model 1700

System Functions:

Data collection, alarming, logging, and process control.

Merck & Company, Inc., Rahway

Installation Date:

Fall 1967

Computer Type:

Model 1700

System Functions:

Batch sequence control.

Shell Development Corporation, Emeryville

Installation Date: Fall 1967

Computer Type: Model 1700

System Functions: Research application in developing advanced concepts of process control. Remote acquisition capability is a cardinal attribute of this system.

Goodyear Tire & Rubber Company, Akron

Installation Date: Fall 1967

Computer Type: Model 1700

System Functions: Analyses of multiple laboratory chromatographs.

Union Carbide Corporation, Chemicals Division

Installation Date: Spring 1968

Computer Type: Model 1700

System Functions: Monitor and control of multiple pilot lines.

Goodyear Tire & Rubber Company, Point Pleasant

Installation Date: Spring 1968

Computer Type: Model 1700

System Functions: Batch sequence control. Control Data Corporation also accepted complete system responsibility for instrumentation, site preparation, and in-plant cabling.

OIL AND GAS PRODUCTION

Continental Oil Company, Northern Wyoming Oil Fields

Installation Date: June 1962; expanded in August 1963

Computer Type: Model 46 with six Model 260 TELEMETROL[®] Field Stations

System Functions: Remote monitoring, alarming, and control of 270 producing oil wells and associated equipment in 5 separate leases. Six remote field units accept, digitize, and store field data from groups of wells and lease equipment.

Continental Oil Company, Central Wyoming Oil Fields

Installation Date: November 1964; expanded in August 1965

Computer Type: Model 636 with 10 TELEMETROL[®] Remote Field Stations

System Functions: Remote monitoring, alarming, and control of 360 producing oil wells and associated equipment in 5 separate leases. Ten remote field units accept, digitize, and store field data from groups of wells and lease equipment.

Continental Oil Company, Sussex District

Installation Date: November 1964

Computer Type: Model 636 with 10 TELEMETROL[®] Remote Field Stations

System Functions: Remote monitoring, alarming, and control of 360 producing oil wells and associated equipment in 5 separate leases. Ten remote field units accept, digitize, and store field data from groups of wells and lease equipment.

Continental Oil Company, Pacific Coast District, Ventura

Installation Date: October 1965

Computer Type: Model 46 with four TELEMETROL[®] Remote Field Stations

System Functions: Remote monitoring, alarming, and control of 220 producing oil wells and associated equipment in two separate leases. Four remote field units accept, digitize, and store field data from groups of wells and lease equipment.

GAS DISPATCHING

Public Service Electric & Gas Company, Jersey City

Installation Date: February 1962

Computer Type: Model 46

System Functions: Automatic gas dispatching information under computer control.

GLASS

Major Glass Company

Installation Date: June 1967
Computer Type: Model 1700
System Functions: Quality control analysis.

Major Glass Company

Installation Date: August 1967
Computer Type: Model 1700
System Functions: Weighing, batching, furnace control, and quality control monitor.

Major Glass Company

Installation Date: Winter 1967-1968
Computer Type: Model 1700
System Functions: Quality control analysis.

TELEVISION PROGRAM CONTROL

National Broadcasting Company, Burbank Switching Central

Installation Date: October 1963

Computer Type: Model 636

System Functions: Complete control of television network program switching and presentation of operating logs.

PAPER

American Can Company, Bleach Plant

Installation Date: June 1968

Computer Type: Model 1700

System Functions: Set point/DDC control with logging.

HIGH DATA RATE CHECKOUT SYSTEMS

Douglas Aircraft Company

Installation Date: August 1965
Computer Type: Model 8090
System Functions: High-speed discrete input systems for aerospace checkout.

North American Aviation, Inc.

Installation Date: March 1966
Computer Type: Model 8090
System Functions: High-speed discrete input systems for aerospace checkout.

General Precision, Inc. , Librascope Group

Installation Date: September 1966
Computer Type: Model 1700
System Functions: Discrete input/output and automatic checkout.

HIGH DATA RATE TELEMETRY

United States Air Force Satellite Test Center

Installation Date: July 1965
Computer Type: Model 160-A
System Functions: Digital-to-analog conversion and satellite tracking.

Lockheed Missiles & Space Company

Installation Date: January 1966
Computer Type: Model 3100
System Functions: Analog-to-digital conversion and telemetry.

Industrieanlagen Betriebsgesellschaft mbH (IABG), Munich, Germany

Installation Date: June 1967
Computer Type: Model 1700
System Functions: General-purpose ground telemetry acquisition system which includes PAM, PDM, PCM, FM/Data Reduction FM capabilities. System includes disk and high-performance tape subsystems and couples to a CONTROL DATA 3800 Computer System.

HIGH DATA RATE MONITORING AND COLLECTION

Stanford Research Institute

Installation Date: October 1964
Computer Type: Model 160-A
System Functions: Analog-to-digital conversion and radio astronomy research.

Petty Geophysical Engineering Company

Installation Date: July 1965
Computer Type: Model 3100
System Functions: Analog-to-digital and digital-to-analog conversion and seismic data reduction.

AVCO Corporation

Installation Date: August 1965
Computer Type: Model 8090
System Functions: Analog-to-digital conversion for classified application.

Dominion of Canada, Department of Mines and Technology Surveys

Installation Date: August 1965
Computer Type: Model 3200
System Functions: Analog-to-digital conversion for a classified application.

Argonne National Laboratory (Atomic Energy Commission)

Installation Date: October 1965
Computer Type: Model 8090
System Functions: Analog-to-digital conversion and nuclear research.

Council for Scientific and Industrial Research, Union of South Africa

Installation Date: January 1966
Computer Type: Model 8090
System Functions: Digital-to-analog and analog-to-digital conversion, wind tunnel instrumentation, and flight research.

Pan American Petroleum Corporation

Installation Date: January 1966
Computer Type: Model 3200
System Functions: Analog-to-digital and digital-to-analog conversion and seismic data reduction.

United Geophysical Corporation

Installation Date: May 1966
Computer Type: Model 3200
System Functions: Analog-to-digital and digital-to-analog conversion and seismic data reduction.

Phillips Petroleum Company

Installation Date: May 1966
Computer Type: Model 3300
System Functions: Analog-to-digital and digital-to-analog conversion and seismic data reduction.

Karlsruhe, West Germany

Installation Date: May 1966
Computer Type: Model 3100
System Functions: Analog-to-digital conversion and nuclear research.

University of Montreal

Installation Date: May 1966

Computer Type: Model 3100

System Functions: Analog-to-digital and digital-to-analog conversion and nuclear research.

Hughes Aircraft Company

Installation Date: October 1966

Computer Type: Model 1700

System Functions: Stress analysis of specimens placed on high-frequency shake table. System utilizes high-speed A/D equipment for acquisition of signals.