

ORTLOFF ENGINEERS, LTD.
Summary
of
SULFUR RECOVERY PROJECTS

YEAR	PLANT OWNER & PLANT LOCATION	CONTRACTOR(S)	SIZE LT/D	PROJECT DESCRIPTION
1985	Clark Oil Company Garyville, LA	Lummus Ortloff Engineers, Ltd.	15	Troubleshooting investigation to determine pressure drop and other operating problems. Performed miscellaneous engineering assignments.
1985	Liquid Energy Corporation Borger, TX	Ortloff Engineers, Ltd.	14	Sulfur Recovery unit turndown study to identify modifications and changes required to operate the unit at reduced feed rates.
1985	Lone Star Gas Co. Warwink, TX	Ortloff Engineers, Ltd.	20	Sulfur Recovery unit study to troubleshoot operating problems.
1985	Marathon Oil Company Indian Basin, NM	Ortloff Engineers, Ltd.	34	Sulfur Recovery unit study to identify operating improvements and provide smooth operations at reduced throughput.
1985	Warren Petroleum Co. Little Knife, ND	Ortloff Engineers, Ltd.	71	Sulfur Recovery unit (CBA Process) study to troubleshoot operating problems and recommend solutions.
1986	Amerada Hess Corporation Seminole, TX	Ortloff Engineers, Ltd.	2x40	Sulfur Recovery unit (CBA Process) start-up assistance, assistance with testing for TACB operating permit, and special problem solving work.
1986	Fina Oil & Chemical Company Big Spring, TX	Ortloff Engineers, Ltd.	38	Sulfur Recovery unit troubleshooting and performance testing assistance to assure compliance with TACB emissions requirements.
1986	Little America Refining Company Casper, WY	Ortloff Engineers, Ltd.	19	Sulfur Recovery unit turndown study to develop modifications and changes required to operate unit at 10 to 25 percent of design.
1986	Placid Refining Co. Port Allen, LA	Ortloff Engineers, Ltd.	10	Sulfur Recovery unit evaluation study involving data collection and analysis to define problems and recommend changes in an existing SRU. Prepared revamp design package and reviewed client's documents for installing the modifications.
1987	Freeport Sulfur Company Offshore Louisiana	Ortloff Engineers, Ltd.	50	Sulfur Recovery unit study to evaluate and select a process to recover sulfur from bleed water flash gas at Freeport's Frasch Mines, and to develop a $\pm 25\%$ installed cost estimate for one plant.
1987	Hawaiian Independent Refinery, Inc. Ewa Beach, HI	Ortloff Engineers, Ltd.	14	Sulfur Recovery unit study including evaluation of the effects of using oxygen enriched air to increase acid gas feed capacity of existing unit to 20 LT/D.

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1987	Phillips Petroleum Company Chatom, AL	Ortloff Engineers, Ltd.	190	Sulfur Recovery unit consulting services to design and prepare the documents needed to purchase a replacement Waste Heat Boiler.
1987	Powerine Oil Company Santa Fe Springs, CA	Ortloff Engineers, Ltd.	2x23	Sulfur Recovery unit consulting services to inspect two shutdown SRU's prior to being restarted. Also prepared inspection report and recommended modifications and operating procedure changes as required.
1988	Diamond Shamrock Refining Company McKee Refinery Sunray, TX	Ortloff Engineers, Ltd. The Pro-Quip Corporation	50	Skid-mounted Claus Sulfur Recovery System, SCOT tailgas cleanup system, and a waste heat recovered tailgas incineration system. Provided conceptual design package, process engineering for project, and startup assistance.
1988	Exxon Company, U.S.A. LaBarge, WY	Ortloff Engineers, Ltd.	2x660	Sulfur Recovery plant capacity increase study of sulfur recovery systems. Developed conceptual design package and cost estimate for the defined modifications to increase capacity from 2 x 500 LT/D.
1988	Fina Oil & Chemical Company Big Spring, TX	Ortloff Engineers, Ltd.	60	Sulfur Recovery unit capacity increase study involving various modifications versus the use of oxygen-enriched air. Prepared design package for modifications and installed cost estimates to increase capacity from 38 LT/D.
1988	Freeport Sulfur Company Mishraq Frasch Mine Mosul, Iraq	Ortloff Engineers, Ltd. The Pro-Quip Corporation	45	Sulfur Recovery System study for recovering sulfur from a Frasch sulfur purification system off-gas stream.
1988	LL&E Petroleum Marketing Mobile, AL	Ortloff Engineers, Ltd.	50	Sulfur Recovery unit tailgas incineration system retrofit design package prepared for operation at 8 LT/D.
1988	LL&E Petroleum Marketing Mobile, AL	Ortloff Engineers, Ltd.	50	Sulfur Recovery and SCOT unit turndown study to specify and estimate cost of modifications required to operate the unit at reduced feed rates.
1988	LL&E Petroleum Marketing Mobile, AL	Ortloff Engineers, Ltd.	10	Sulfur Recovery unit consulting to review the design of a reapplied SRU, then recommend and design modifications for improved performance and operability.
1988	MKP Operating Company McKamie, AR	Ortloff Engineers, Ltd.	27	Sulfur Recovery unit study to increase throughput of existing unit, with estimated installed cost of recommended modifications.
1988	Mobil Oil Mary Ann Facility Codan, AL	Ortloff Engineers, Ltd.	225	Sulfur Recovery and SCOT tailgas cleanup units startup assistance.
1988	Unocal Chunchula, AL	Ortloff Engineers, Ltd.	23	Sulfur Recovery unit turndown study to determine modifications and additions required to operate SRU at reduced rates.
1989	Conoco, Inc. Ponca City Refinery Ponca City, Oklahoma	Ortloff Engineers, Ltd. The Pro-Quip Corporation	20	Skid-mounted Claus Sulfur Recovery System with a tailgas incineration system. Provided conceptual design package and process engineering for project.

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1989	Exxon Company, U.S.A. LaBarge, WY	Ortloff Engineers, Ltd.	2x660	Sulfur Recovery plant truck loading facility addition design and cost estimate.
1989	Fina Oil & Chemical Company Big Spring, TX	Ortloff Engineers, Ltd.	60-110	Sulfur Recovery plant capacity increase study involving the evaluation of various existing plant retrofit modification schemes versus addition of new units.
1989	LL&E Petroleum Marketing Mobile, AL	Ortloff Engineers, Ltd.	10	Sulfur Recovery unit study to predict performance of a reapplied SRU for environmental permitting purposes.
1989	Phillips Petroleum Company Lea County, NM	Ortloff Engineers, Ltd.	26	Sulfur Recovery plant trouble-shooting to define operating and performance problems and recommend/implement optimum solutions.
1989	Western Slope Refining Company Fruita, CO	Ortloff Engineers, Ltd.	12	Sulfur Recovery unit consulting assistance in the restart of a Claus SRU and Tailgas Incinerator with new feed streams.
1990	Amerada Hess Corporation Tioga, ND	Ortloff Engineers, Ltd. Litwin Engineers & Constructors, Inc.	225	Sulfur Recovery unit study to compare retrofitting the CBA Process into an existing unit and the installation of a completely new CBA Process SRU. Cost estimates prepared for use in AFCE.
1990	Ashland Petroleum Ashland, KY	The Pritchard Corporation The Pro-Quip Corporation Ortloff Engineers, Ltd.	50	Sulfur Recovery project design consulting and assistance in the implementation of Schedule A packages.
1990	Exxon Company, U.S.A. Flomaton, AL	Ortloff Engineers, Ltd.	142	Sulfur Recovery unit study to define, specify, and estimate the installed cost of mechanical and process improvement modifications.
1990	Freeport Sulfur Company Mishraq Frasch Mine Mosul, Iraq	Ortloff Engineers, Ltd. The Pro-Quip Corporation Hawi Brothers	45	Skid-mounted Claus Sulfur Recovery System with a waste heat recovered tailgas incineration system to recover sulfur from a Frasch sulfur purification system off-gas stream. Provided conceptual design package and process engineering for project.
1990	Freeport-McMoRan Oil & Gas Company Main Pass Block 299 Offshore Louisiana	Ortloff Engineers, Ltd.	50	Sulfur recovery process screening study for processing an off-gas stream from a Frasch sulfur mine.
1990	Freeport-McMoRan Oil & Gas Company Main Pass Block 299 Offshore Louisiana	Ortloff Engineers, Ltd.	50	Sour Production processing facility conceptual design and Schedule A package prepared for installation on an offshore Louisiana platform.
1990	Giant Refining Company Gallup, NM	Ortloff Engineers, Ltd. The Pro-Quip Corporation	10	Sulfur Recovery preliminary design package furnished for AFCE cost estimate study.
1990	Koch Refining Koch St. Paul, MN	Ortloff Engineers, Ltd. Ford, Bacon & Davis Utah	250	Sulfur Recovery unit bid qualification support, selling assistance, and design consulting and review.
1990	Liquid Energy Corporation Artesia, NM	Ortloff Engineers, Ltd.	22	Sulfur Recovery unit evaluation study for a reapplication in a New Mexico project, with conversion to SUPERCLAUS Process.

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1990	Phillips Petroleum Company Artesia, NM	Ortloff Engineers, Ltd.	55	Sulfur Recovery unit problem solving study to determine and compare modifications to allow acceptable performance on lower concentration feed gas. Prepared conceptual design package and helped implement recommended modifications.
1990	Phillips Petroleum Company Eunice, NM	Ortloff Engineers, Ltd.	60	Sulfur Recovery unit study to identify and correct operating problems.
1990	Texaco, U.S.A. Vealmoor, TX Eunice, NM	Ortloff Engineers, Ltd. BE&K of Texas, Inc.	10 15	Design consulting on two recycle Selectox process sulfur recovery units designed and constructed for Texaco, Inc.
1990	Unocal Offshore Platform	Ortloff Engineers, Ltd.	150	Gas Treating and Sulfur Recovery facility conceptual design package for use in obtaining competitive EPC bids on a facility to treat inlet gas, recover sulfur, and dehydrate residue gas. Also, prepared an AFE quality installed cost estimate after completing the conceptual design package.
1991	Amerada Hess Corporation Tioga Gas Plant Tioga, North Dakota	Ortloff Engineers, Ltd. Litwin Engineers & Constructors, Inc. Ref-Chem Corp.	225	Claus/CBA Sulfur Recovery System with waste heat recovered tailgas incineration. Provided conceptual design package, process engineering for project, and startup assistance.
1991	Amerada Hess Corporation Tioga, ND	Ortloff Engineers, Ltd. Litwin Engineers & Constructors, Inc. Ref-Chem Corp.	225	Sulfur Recovery unit sulfur storage tank detailed design package provided.
1991	American Central Gas Companies, Inc. Odessa, TX	Ortloff Engineers, Ltd.	25	Sulfur Recovery study involving review and simulation of a sulfur recovery unit to identify causes of operating problems and recommend solutions.
1991	Coastal Derby Refining Company Coastal Derby Refin. Wichita, Kansas	Ortloff Engineers, Ltd. The Pro-Quip Corporation	20	Skid-mounted Claus Sulfur Recovery System with a tailgas incineration system. Provided conceptual design package, process engineering for project, and startup assistance.
1991	Exxon Company, U.S.A. Flomaton, AL	Ortloff Engineers, Ltd.	142	Sulfur Recovery unit study to replace existing incinerator and add waste heat recovery. Prepared conceptual design package.
1991	Fina Oil & Chemical Company Big Spring, Texas	Ortloff Engineers, Ltd. Fluor Daniel, Inc. The Pro-Quip Corporation	60	Preliminary process design and cost estimate for a new refinery Sulfur Recovery facility consisting of a Claus SRU, SCOT TGCU, and tailgas incinerator with waste heat recovery.
1991	Fina Oil & Chemical Company Port Arthur, TX	Ortloff Engineers, Ltd.	105 200	Sulfur Recovery and Tailgas Cleanup unit consulting and engineering work to assist Fina in developing a plan to eliminate excessive sulfur emission episodes. Attended meetings with the TACB, Texas Attorney General's office, and Fina.
1991	Freeport-McMoRan Oil & Gas Company Main Pass Block 299 Offshore Louisiana	Ortloff Engineers, Ltd. The Pro-Quip Corporation Petro-Marine Engineering	50	Skid-mounted/modular Claus Sulfur Recovery System with a tailgas incineration system and related upstream processing units installed on an offshore platform. Provided conceptual design package, process engineering for project, and startup assistance.

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1991	Hawaiian Independent Refinery, Inc. Ewa Beach, HI	Ortloff Engineers, Ltd.	23 40	Sulfur Recovery on-site assistance to advise and assist client's personnel in preparing the Sulfur Recovery and Tailgas Cleanup Units for a compliance test, gathering data during the test, and analyzing the results of the test.
1991	Hawaiian Independent Refining, Inc. HIRI Refinery Ewa Beach, HI	Ortloff Engineers, Ltd. The Pro-Quip Corporation E. H. Black Co.	23 40	Skid-mounted Claus Sulfur Recovery System, SCOT tailgas cleanup system, and waste heat recovered tailgas incineration system. Provided conceptual design package, process engineering for project, and startup assistance.
1991	Sinclair Oil Corporation Tulsa, OK	Ortloff Engineers, Ltd.	35	Sulfur Recovery and Gas Treating study to determine and recommend the debottlenecking modifications and/or replacement options required to achieve a sulfur recovery capacity of at least 35 LT/D.
1992	Exxon Company, U.S.A. Atmore, AL	Ortloff Engineers, Ltd.	450 450	Sulfur Recovery study for upgrading two SRUs, included specifying replacement sulfur condensers. Developed improved operating procedures for the SRU's.
1992	Exxon Company, U.S.A. Flomaton, AL	Ortloff Engineers, Ltd.	142	Sulfur Recovery plant conceptual design package for upgrading SRU by replacement of the waste heat reclaimer, sulfur condenser and acid gas preheater.
1992	Fina Oil & Chemical Company Port Arthur, TX	Ortloff Engineers, Ltd.	105	Sulfur Recovery and Tailgas Cleanup unit consulting and engineering activities required to revise the SCOT TGCU and Tailgas Incinerator design packages for a lower capacity, instead of the design basis capacity previously used to prepare the Schedule A package.
1992	Fina Oil & Chemical Company Big Spring Refinery Big Spring, Texas	Ortloff Engineers, Ltd. Fluor Daniel, Inc. The Pro-Quip Corporation	60	Skid-mounted Claus Sulfur Recovery System, SCOT tailgas cleanup system, and waste heat recovered tailgas incineration. Provided conceptual design package, process engineering for project, and startup assistance.
1992	Frontier Refining Company Frontier Refinery Cheyenne, Wyoming	Ortloff Engineers, Ltd. The Pro-Quip Corporation	65	Skid-mounted Claus Sulfur Recovery System. Provided conceptual design package, process engineering for project, and startup assistance.
1992	GPM Gas Corporation Dumas, TX	Ortloff Engineers, Ltd.	6	Sulfur Recovery unit study to convert an existing SRU to the CBA process and prepare final process flow diagram and material balance documents for use in TACB permit application work.
1992	GPM Gas Corporation Fullerton, TX	Ortloff Engineers, Ltd.	62	Sulfur Recovery unit study to determine the best modifications to achieve 97% and 98.5% recoveries.
1992	GPM Gas Corporation Goldsmith, TX	Ortloff Engineers, Ltd.	110	Sulfur Recovery unit study to determine the best modifications to achieve 97% and 98.5% recoveries.
1992	LL&E Petroleum Marketing Mobile, AL	Ortloff Engineers, Ltd.	1-15	Sulfur Recovery, SCOT, and incineration units revamp project. Provided conceptual design package, process engineering for project, and startup assistance to revamp existing 50 LT/D plant for operation at variable low rates.

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1992	Mobil Oil Mary Ann Plant Codens, AL	Ortloff Engineers, Ltd.	280	Sulfur Recovery process design package including a parallel front-end gas treating/conditioning train plus debottlenecking modifications in the sulfur recovery systems to increase capacity from 225 LT/D.
1992	Pacific Refining	Ortloff Engineers, Ltd. The Pro-Quip Corporation	20	Sulfur Recovery unit report prepared for use in an application for permit to construct a Sulfur Recovery plant including SRU, SCOT, and INCIN systems.
1992	Sid Richardson Jal, NM	Ortloff Engineers, Ltd. Ref-Chem Corporation	18	Sulfur Recovery plant conceptual design package covering the reapplication of a used SRU purchased for relocation from Meridian, Mississippi to Jal, New Mexico.
1992	Texaco, U.S.A. Eunice, NM	Ortloff Engineers, Ltd.	15	Sulfur Recovery plant study to provide consulting recommendations and advice during catalyst changeout. Provided recommendations for modifications to increase catalyst service life.
1992	Texaco, U.S.A. Velma, OK	Ortloff Engineers, Ltd.	10	Sulfur Recovery plant study of operating and performance problems and recommended solutions.
1993	Amoco Oil Company Salt Lake City Ref. Salt Lake City, Utah	Ortloff Engineers, Ltd. The Pro-Quip Corporation The Pritchard Corporation	15	Skid-mounted Claus Sulfur Recovery System. Provided conceptual design package, process engineering for project, and startup assistance.
1993	Fina Oil & Chemical Company Port Arthur, TX	Ortloff Engineers, Ltd. Fluor Daniel, Inc.	160	Reviewed detailed design work for a Claus Sulfur Recovery System being constructed using the Schedule A package prepared previously by Ortloff.
1993	GPM Gas Corporation Goldsmith Gas Plant Goldsmith, Texas	Ortloff Engineers, Ltd. Ref-Chem Corporation	110	Converted Claus Sulfur Recovery Unit to the CBA Process to achieve 98.5% recovery performance. Provided conceptual design package, process engineering for project, and startup assistance.
1993	Indian Refining Company L.P. Lawrenceville Refin. Lawrenceville, IL	Ortloff Engineers, Ltd. The Pro-Quip Corporation	57 80	Skid-mounted Claus Sulfur Recovery System and SCOT tailgas system. Provided conceptual design package, process engineering for project, and startup assistance.
1993	Marathon Oil Company Indian Basin SRU	Ortloff Engineers, Ltd.	34	Simulate existing SRU and develop estimates of the modifications required to successfully process a higher feed rate.
1993	Warren Petroleum Company Sulfur Springs, TX	Ortloff Engineers, Ltd.	82	Sulfur Recovery unit study to troubleshoot operating problems and improve recovery.
1994	Ergon, Inc. Vicksburg	Ortloff Engineers, Ltd.	15	Evaluate the condition and applicability of one or more used sulfur recovery plants for installation in Client's refinery.
1994	Goldston Oil Corporation Indian Rock Gilmer, Texas	Ortloff Engineers, Ltd.	8	Sulfur Recovery and Gas Treating process screening studies for a new plant installation. Prepared conceptual design package for use in soliciting competitive bids for plant construction, and assisted with bid evaluation.

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1994	GPM Gas Corporation Linam Ranch Lea County, NM	Ortloff Engineers, Ltd.	40	Sulfur Recovery process screening study to improve recovery of an existing SRU. Prepared conceptual design package for adding a 4th catalytic stage. Provided consulting and startup assistance.
1994	Murphy Oil USA, Inc. Meraux Refinery Meraux, Louisiana	Ortloff Engineers, Ltd. The Pro-Quip Corporation	80	Skid-mounted Claus Sulfur Recovery System, SCOT tailgas cleanup system, and a tailgas incineration system. Provided conceptual design package, process engineering for project, and startup assistance.
1995	ECOPETROL Barrancabermeja Colombia, S.A.	Ortloff Engineers, Ltd.	54	Sulfur Recovery study for improving recovery reliability of existing SRU. Prepared conceptual design package for recommended modifications and provided startup assistance.
1995	Freeport-McMoRan Oil & Gas Company	Ortloff Engineers, Ltd. Crescent Technology Inc.		Perform screening study of available proven processes to remove H ₂ S from sulfur and hydrocarbon contaminated air.
1995	Goldston Oil Corporation Indian Rock Gilmer, Texas	Ortloff Engineers, Ltd. The Pro-Quip Corporation	8	Skid-mounted CBA Process Sulfur Recovery System with a waste heat recovered tailgas incineration system. Provided conceptual design package, process engineering for project, and startup assistance.
1995	GPM Gas Corporation Artesia Plant New Mexico	Ortloff Engineers, Ltd. Ref-Chem	55	Provide engineering and design for repair of sulfur pit.
1995	Lion Oil Company El Dorado Refinery El Dorado, Arkansas	Ortloff Engineers, Ltd. The Pro-Quip Corporation	80	Skid-mounted Claus Sulfur Recovery System, SCOT tailgas cleanup system, and waste heat recovered tailgas incineration system. Provided conceptual design package, process engineering for project, and startup assistance.
1995	Merit Natural Gas Company Warwink, TX	Ortloff Engineers, Ltd.	20	Assist with improving current SRU operations, and evaluate means to debottleneck and/or improve recovery of existing SRU for a new feed gas composition.
1995	Texaco, U.S.A. Eunice, NM	Ortloff Engineers, Ltd.	15	Perform detailed design work and equipment specification to provide a sulfur pit vent system to the existing sulfur pit.
1995	Unocal (Energy Resources Div.) Moab, UT	Ortloff Engineers, Ltd.	30	Sulfur Recovery unit study to improve reliability and recovery efficiency of an existing Recycle Selectox SRU. Identified recommended improvements, prepared conceptual design package, and assisted with preparing and presenting BACT analysis to the air quality control group.
1995	Warren Petroleum Company Monument, NM	Ortloff Engineers, Ltd.	32	Sulfur Recovery unit study on the feasibility and cost of installing both electric and inline gas reactor feed heaters.
1995	Western Gas Resources, Inc. Mivida	Ortloff Engineers, Ltd.	8	Sulfur Recovery unit consulting to correct operating problems with an existing SRU processing acid gas with low H ₂ S content.

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1995	YPF S.A. La Plata Refinery Buenos Aires, Argen.	Ortloff Engineers, Ltd. The Pro-Quip Corporation	60	Sulfur Recovery unit study to recommend modifications to upstream processing units to improve the quality of the acid gas streams produced. Prepared conceptual design package for recommended modifications.
1995	YPF S.A. Lujan de Cuyo Ref. Mendoza, Argentina	Ortloff Engineers, Ltd. The Pro-Quip Corporation	60	Sulfur Recovery unit study to recommend modifications to upstream processing units to improve the quality of the acid gas streams produced. Prepared conceptual design package for recommended modifications.
1996	Atlas Processing Company Shreveport Refinery Shreveport, LA	Ortloff Engineers, Ltd. The Pro-Quip Corporation	20	Skid-mounted CBA Process Sulfur Recovery system. Provided conceptual design package, process engineering for project, and startup assistance.
1996	Little America Refining Company Casper, WY	Ortloff Engineers, Ltd.	19	Sulfur Recovery troubleshooting study of existing sulfur recovery unit and incinerator.
1996	Pemex Salamanca and Tula Plants, Mexico	Ortloff Engineers, Ltd. Ford, Bacon & Davis	60	Provide instrumentation and control specialist to perform precommissioning check-out, startup advisor, and instrumentation troubleshooting work.
1997	Fina Oil & Chemical Company Port Arthur, TX	Ortloff Engineers, Ltd.	260	Sulfur Recovery study to determine the maximum sulfur production rate that can be achieved utilizing the existing SCOT towers. Determine what modifications would be necessary to the SCOT and incinerator to utilize all existing sulfur plant capacity.
1997	Mead Containerboard, Inc. Stevenson, Alabama	Ortloff Engineers, Ltd. The Pro-Quip Corporation Ahlstrom Recovery Inc. Raytheon E&C BE&K	56	Skid-mounted Claus Process Sulfur Recovery system for paper mill effluent to reduce emissions by capturing sulfur for reuse in processing wood pulp. Provided conceptual design package, process engineering for project, and startup assistance.
1997	Warren Petroleum Company (now Dynegey) Sandhills CBA SRU Crane County, TX	Ortloff Engineers, Ltd.	20	SRU capacity study and preliminary process design for new CBA SRU/TTO.
1998	YPF S.A. La Plata Refinery La Plata, Argentina	Ortloff Engineers, Ltd. The Pro-Quip Corporation Astra-Evangelista S.A.	61	Skid-mounted Claus Sulfur Recovery System and waste heat recovered tailgas incineration system. Provided conceptual design package, process engineering for project, and startup assistance.
1998	YPF S.A. Lujan de Cuyo Refin. Mendoza, Argentina	Ortloff Engineers, Ltd. The Pro-Quip Corporation Astra-Evangelista S.A.	60	Skid-mounted Claus Sulfur Recovery System and waste heat recovered tailgas incineration system. Provided conceptual design package, process engineering for project, and startup assistance.
1999	Mead Containerboard, Inc. Stevenson, AL	Ortloff Engineers, Ltd.	56	Perform SRU simulations to evaluate and optimize SRU performance. Provide on-site assistance.
2000	Dynegey Midstream Services, L.P. Monument, NM	Ortloff Engineers, Ltd.	33	Assist client with troubleshooting operating problems in existing SRU.

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2000	Frontier Refining, Inc. Cheyenne, Wyoming	Ortloff Engineers, Ltd.	100	Tailgas Thermal Oxidation unit study to debottleneck existing unit and correct operating deficiencies.
2000	Jordan Petroleum Refinery Co. Ltd. Zarka, Jordan	Ortloff Engineers, Ltd. Larsen & Toubro Limited	23	Sulfur Recovery unit study to critique design package prepared by another designer and suggest changes to improve reliability and service life.
2000	Port Arthur Coker Company, L.P. Port Arthur Refinery	Ortloff Engineers, Ltd. The Pro-Quip Corporation Foster Wheeler Jacobs Engineering	417	Claus Sulfur Recovery System (2 trains), SCOT tailgas cleanup system, and waste heat recovered tailgas incineration system. Provided conceptual design package, process engineering for project, and startup assistance.
2000	Ras Laffan Onshore Qatar	Ortloff Engineers, Ltd. Foster Wheeler USA Corp.	240	Sulfur Recovery unit study to critique design package prepared by another designer and suggest changes to improve reliability and service life.
2000	Saudi Aramco Mobil Refinery (Samref) Yanbu, Saudi Arabia	Ortloff Engineers, Ltd. Foster Wheeler USA Corp.	2x153	Sulfur Recovery unit study to debottleneck existing SRUs to increase capacity to 2x219 LT/D, and to correct operating deficiencies in existing operations.
2001	Crescent Technology Main Pass 299 Offshore, Louisiana	Ortloff Engineers, Ltd.	50	Sulfur Recovery unit consulting to correct operating deficiencies, provide operator training, and provide starting assistance.
2001	Exxon Mobil Campana Refinery, Argentina	Ortloff Engineers, Ltd. The Pro-Quip Corporation	15	Screening study and cost analysis for new refinery gas treating and sulfur recovery units.
2001	Freeport-McMoran Sulphur LLC Main Pass 299 Offshore, Louisiana	Ortloff Engineers, Ltd.	50	Provide on-site startup assistance to assist client with the transition during change-over to a new third-party operating group.
2001	Mead Containerboard, Inc. Stevenson Mill Stevenson, AL	Ortloff Engineers, Ltd.	56	On-site assistance to help client minimize turnaround duration.
2001	Shell Chemical Company Mobile Refinery Saraland, AL	Ortloff Engineers, Ltd.	Expand to 18 LT/D	Prepare a report recommending what modifications should be made to debottleneck the existing Sulfur Recovery Unit #1, existing SCOT Tailgas Cleanup Unit, and existing Tailgas Incinerator (SRU#1/SCOT/Incin) for processing a nominal 18 LT/D sulfur feed rate.
2002	PetroChina Southwest Oil and Gas Co., Ltd. Dianjiang Plant Dianjiang, China	Ortloff Engineers, Ltd. Linde AG	16	Clinsulf-SDP Sulfur Recovery System. Provided conceptual design package, process engineering, and startup assistance for the front-end section of the plant.
2003	Abu Dhabi Oil Refining Company Ruwais Refinery Ruwais, U.A.E.	Ortloff Engineers, Ltd. Larsen & Toubro Limited L&T - Chiyoda	51	CBA Sulfur Recovery System and waste heat recovered tailgas incineration system. Provided conceptual design package, process engineering for project, and startup assistance.
2004	Alon USA Big Spring Refinery Big Spring, Texas	Ortloff Engineers, Ltd Linde BOC Process Plants LLC	85	SCOT tailgas cleanup system. Provided conceptual design package and process engineering for project.

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2004	Valero Port Arthur Refinery Port Arthur Refinery Port Arthur, TX	Ortloff Engineers, Ltd. Linde BOC Process Plants LLC Jacobs Engineering	208	Claus Sulfur Recovery System. Provided conceptual design package, process engineering for project, and startup assistance.
2004	Valero Port Arthur Refinery Port Arthur Refinery Port Arthur, TX	Ortloff Engineers, Ltd. Linde BOC Process Plants LLC Jacobs Engineering	417	Claus Sulfur Recovery System (2 trains), SCOT tailgas cleanup system, and waste heat recovered tailgas incineration system. Provided conceptual design package, process engineering for project, and startup assistance.
2005	Coffeyville Resources Refining & Marketing Coffeyville Refinery Coffeyville, KS	Ortloff Engineers, Ltd Linde BOC Process Plants LLC	100	Skid-mounted Claus Sulfur Recovery System, SCOT tailgas cleanup system, and waste heat recovered tailgas incineration system. Provided conceptual design package, process engineering for project, and startup assistance.
2006	Calumet Shreveport Lubricants Shreveport Refinery Shreveport, LA	Ortloff Engineers, Ltd. Linde BOC Process Plants LLC	25	Skid-mounted CBA Process Sulfur Recovery system. Provided conceptual design package, process engineering for project, and startup assistance.
2006	Sinclair Wyoming Refining Company Sinclair Refinery Sinclair, WY	Ortloff Engineers, Ltd. Linde BOC Process Plants LLC	80	Skid-mounted Claus Sulfur Recovery System, SCOT tailgas cleanup system, and waste heat recovered tailgas incineration system. Provided conceptual design package, process engineering for project, and startup assistance.
2006	Sinclair Wyoming Refining Company Sinclair Refinery Sinclair, WY	Ortloff Engineers, Ltd. Linde BOC Process Plants LLC	80	Skid-mounted Claus Sulfur Recovery System, SCOT tailgas cleanup system, and waste heat recovered tailgas incineration system. Provided conceptual design package, process engineering for project, and startup assistance.
2007	Occidental Permian Denver City, TX	Ortloff Engineers, Ltd. HPF, Inc.	7.5	Converted Claus Sulfur Recovery Unit to the CBA Process to achieve % recovery performance. Provided conceptual design package and process engineering for project.
2007	Petrojam Limited Petrojam Refinery Kingston, Jamaica	Ortloff Engineers, Ltd. SNC - Lavalin	60	Amine regeneration, sour water stripping, Claus Sulfur Recovery System (2 trains), SCOT Tailgas Cleaning System, and waste heat recovered tailgas incineration system. Provided conceptual design package.
2008	Abu Dhabi Oil Refining Company Ruwais Refinery Ruwais, U.A.E.	Ortloff Engineers, Ltd. GS Engineering & Construction	100	Claus Sulfur Recovery System, SCOT Tailgas Cleanup System, and waste heat recovered tailgas incineration system. Provided conceptual design package, process engineering during project, and startup assistance.
2008	Oil & Gas Development Company Limited Dakhni Gas Plant Dakhni, Pakistan	Ortloff Engineers, Ltd. Presson Descon International Ltd.	90	Claus Sulfur Recovery System and tailgas incineration system. Provided conceptual design package and process engineering during project.
2008	Sinclair Tulsa Refining Company Sinclair Refinery Tulsa, OK	Ortloff Engineers, Ltd. Linde Process Plants	150	Amine regeneration, sour water stripping, SUPERCLAUS Sulfur Recovery System, waste heat recovered tailgas incineration system, and DynaWave tailgas scrubbing system. Provided conceptual design package.

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2008	Sinclair Tulsa Refining Company Sinclair Refinery Tulsa, OK	Ortloff Engineers, Ltd. Linde Process Plants	150	Amine regeneration, sour water stripping, SUPERCLAUS Sulfur Recovery System, waste heat recovered tailgas incineration system, and DynaWave tailgas scrubbing system. Provided conceptual design package.
2008	Sinclair Tulsa Refining Company Sinclair Refinery Tulsa, OK	Ortloff Engineers, Ltd. Linde Process Plants	150	Amine regeneration, sour water stripping, SUPERCLAUS Sulfur Recovery System, waste heat recovered tailgas incineration system, and DynaWave tailgas scrubbing system. Provided conceptual design package.
2008	Total Petrochemicals USA, Inc. Port Arthur Refinery Port Arthur, TX	Ortloff Engineers, Ltd. Fluor Corporation	225	Claus Sulfur Recovery System, SCOT Tailgas Cleanup System, and waste heat recovered tailgas incineration system. Provided conceptual design package, process engineering during project, and startup assistance.
2008	Total Petrochemicals USA, Inc. Port Arthur Refinery Port Arthur, TX	Ortloff Engineers, Ltd. Fluor Corporation	225	Claus Sulfur Recovery System, SCOT Tailgas Cleanup System, and waste heat recovered tailgas incineration system. Provided conceptual design package, process engineering during project, and startup assistance.
2009	Cash Creek Generation LLC Henderson Co, KY	Ortloff Engineers, Ltd. UOP LLC Burns & McDonnell	293	Claus Sulfur Recovery System (2 trains) SCOT Tailgas Conversion System, waste heat recovered tailgas incineration system, and DynaWave Tailgas scrubbing system. Provided conceptual design package.
2010	Hindustan Petroleum Corporation Ltd. Mumbai Refinery Mumbai, India	Ortloff Engineers, Ltd. Linde Process Plants Linde Engineering India	130	Claus Sulfur Recovery System (2 trains), SCOT Tailgas Cleanup System, and waste heat recovered tailgas incineration system. Provided conceptual design package, process engineering for project, and startup assistance.
2011	Pohang Iron and Steel Company (POSCO) POSCO SNG Project Gwangyang, Korea	Ortloff Engineers, Ltd. Linde Process Plants Linde Engineering	68	Claus Sulfur Recovery System, SCOT Tailgas Conversion System, and waste heat recovered tailgas incineration system. Provided conceptual design package, project engineering for project, and startup assistance.
2011	Samsung Total Petrochemicals No. 2 Aromatics Complex Daesan, Korea	Ortloff Engineers, Ltd. UOP LLC Samsung Engineering	68	Claus Sulfur Recovery System (2 trains), SCOT Tailgas Cleanup System, and waste heat recovered tailgas incineration system. Provided conceptual design package.
2012	PEMEX Refinacion Madero Refinery Tamaulipas, Mexico	Ortloff Engineers, Ltd. CB&I, Inc. ICA Fluor	148	CBA Sulfur Recovery System. Provided conceptual design package.
2012	PEMEX Refinacion Minatitlan Refinery Veracruz, Mexico	Ortloff Engineers, Ltd. CB&I, Inc. Tecnicas Reunidas	148	CBA Sulfur Recovery System. Provided conceptual design package.
2012	PEMEX Refinacion Salamanca Refinery Guanajuato, Mexico	Ortloff Engineers, Ltd. CB&I, Inc.	295	CBA Sulfur Recovery System (3 trains). Provided conceptual design package.
2012	PEMEX Refinacion Salina Cruz Refinery Oaxaca, Mexico	Ortloff Engineers, Ltd. CB&I, Inc. FW Iberia	79	CBA Sulfur Recovery System. Provided conceptual design package.

YEAR	PLANT OWNER & PLANT LOCATION	CONTRACTOR(S)	SIZE LT/D	PROJECT DESCRIPTION
2012	Shell Chemical Company Mobile Refinery Sinclair Refinery Saraland, AL	Ortloff Engineers, Ltd.	Expand to 35 LT/D	Prepare a report recommending what modifications should be made to debottleneck the existing Sulfur Recovery Unit #1, existing SCOT Tailgas Cleanup Unit, and existing Tailgas Incinerator (SRU#1/SCOT/Incin) for processing a nominal 35 LT/D sulfur feed rate.
2014	Husky -CNOOC Madura Limited Madura BD Field Offshore Indonesia	Ortloff Engineers, Ltd Bumi Armada Berhad	25	Selectox/CBA Sulfur Recovery System and waste heat recovered tailgas incineration system. Provided conceptual design package, process engineering during project, and startup assistance.
2016	ADNOC Refining Ruwais, U.A.E.	Ortloff Engineers, Ltd Wisom Engineering, Ltd.	100	Claus Sulfur Recovery System, SCOT Tailgas Cleanup System, and wste heat recovered tailgas incineration system. Will provide conceptual design package, process engineering during project, and startup assistance.
2017	Valero Energy Corporation Port Arthur, TX	Ortloff Engineers, Ltd Richard Design Services	417	Claus Sulfur Recovery System (2 trains), SCOT tailgas cleanup system, and waste heat recovered tailgas incineration system. Provided conceptual design package.