

NAME: Jean-Louis AUDE

PRESENT POSITION: Director of the Water and Urban Development Business Unit, SOGREAH Consultants, Artelia group

DATE OF BIRTH: 14 January 1955

NATIONALITY: French

LANGUAGES: French, English.

EDUCATION

- Diploma of Advanced Studies in Hydrogeology, Grenoble, 1980.
- Thesis in Applied Geology - Option Geotechnics, Grenoble, 1983.
- Continuing education:
 - Geotechnics of tunnels, Ecole Nationale des Ponts et Chaussées, Paris, 1989.
 - Tunnel modelling, Ecole Nationale des Ponts et Chaussées, Paris, 1992
 - Public buildings procurement law and design and construction supervision – CREDEF
 - Proving claims under the FIDIC conditions of contract, London, 1994.
 - FIDIC training course, James R. Knowles, Grenoble, 2000.
- Training resulting in the award of a diploma in the provision of legal advice incidental to consultancy services - Syntec, 2008

KEY QUALIFICATIONS

After training in the analysis of geological, hydrogeological and geotechnical problems related to civil engineering, Mr Aude widened his field of activity by assuming responsibility for multidisciplinary studies of integrated development schemes (galleries, underground excavations, dams, etc.) from design stage through to implementation and then other projects (such as large supply mains, large sewerage networks, pumping stations, treatment plants, etc.).

This has given him a wealth of experience in design, inspection and management, as well as in the organisation and running of large works projects, enabling him to be involved at all stages of a project including contractual aspects.

PROFESSIONAL EXPERIENCE

URBAN DEVELOPMENT

SAUDI ARABIA 2009-2011

Half Moon Bay new town. El Khobar District.
Design study of a new town with a population of 420,000 and a surface area of 25,000 hectares along the coast of the Persian Gulf.
Project manager for infrastructure: roadways, drinking water networks, waste water, surface water, wastewater treatment and irrigation, impact assessment, solid waste management.

LIBYA	2010-2011	<p>Missrata new town Design study of the infrastructure for a town with a population of 220,000 and a surface area of 5,200 hectares: roadways, water networks including a wastewater treatment plant, electricity and gas supply networks, telecommunications and irrigation. Total cost of works: €437 million; Client: VINCI Construction (project put on standby following recent events). Project director</p>
ARMENIA	2008-2009	<p>Urban development project in the Koud district of Yerevan. Feasibility study and preliminary design studies for a district with a population of 45,000 and a surface area of 18 hectares. Study of infrastructure (water networks, electricity supply network, telecommunications networks, vacuum household waste collection networks, etc.) including topography, geotechnics, seismicity study, road traffic study and impact assessment. Project manager.</p>
DOMINICAN REPUBLIC	2006-2010	<p>Atlantica Resort Detailed design and supervision of a new town of 35 000 inhabitants, including: water supply, sewage and waste water treatment, energy supply, roads, telecommunication, marina, harbour and airport Total investment: US\$105m Project Director</p>

PUMPING STATIONS

ALGERIA	2005-2006	<p>Connections to the Regional Water grid of 3 Desalination plants: Tafsout, Sidi Djelloul and Mostaganem. Preliminary design and tender documents for pumping stations with discharges varying from 1.15 to 1.7m³/s and total head of 50 to 180 m Client: Algérienne des Eaux Project Manager.</p>
FRANCE	1999-2003	<p>Saint-Maurice pumping station in Amiens. Complete engineering services (from preliminary design studies to acceptance of works). Cost of works: 2,8 M€ Pumping of effluent to the treatment plant. Installed discharge: 1.25m³/s. Project Manager.</p>
EGYPT	1999-2002	<p>East Bank Wastewater Project, Cairo. Design study and tender documents for the main conveyance pipes to the treatment plant, and three pumping stations (discharge of 25 m³/s; one with a 40 m head and two with a 7 m head). Cost of works: 230 MUSD Project Manager.</p>
REUNION, FRANCE	1995-1997	<p>West Coast irrigation - branch 4: 8 km of 700 and 900 mm diameter pipes, four 2.5 MW pumping stations, four 55 000 m³ reservoirs, 30 km of tertiary pipes. Cost of works: 19 M€ Design and tender documents. Project Manager.</p>

TREATMENT PLANTS

ROMANIA	2006-IN PROGRESS	Drobeta Sanitation and Wastewater project Training in FIDIC contract management Contract Engineer
PALESTINE	2000-IN PROGRESS	Southern Gaza sewage treatment plant. Design, call for tenders and inspection of works. Activated sludge with phosphorus and nitrogen treatment. Reinjection of treated water. Capacity of 40 000 m3/d (300 000 PE).
PALESTINE	2009-2012	United Nations Development Programme for the design of a treatment plant at Khan Yunis in the southern part of the Gaza Strip (376 000 PE): reinjection of treated waste water into the aquifer <ul style="list-style-type: none"> • Detailed design. • Tender documents (FIDIC Red Book type). Position: Project Manager. Client: UNDP/PAPP
SENEGAL	2009-2010	<p>A study of the collection, transport and treatment of industrial and domestic wastewater from the industrial free zone and its surrounding residential areas had been performed in 2002 with the aim of protecting Hann Bay. The Owner has requested a supplementary study in order to update the data and optimise the solution to be implemented, i.e.:</p> <ul style="list-style-type: none"> • construction of a 13 km long intercepting gravity-flow sewer along the sea front, with 7 intermediate pumping stations, • construction of a pumping station at the downstream end, • construction of a treatment plant, • Construction of a 3 km long sea outfall. <p>The supplementary studies will concern the following:</p> <ul style="list-style-type: none"> • widening the collection area to include the port and as much of the surrounding population as possible, • addition of a primary treatment (connection of industrial wastewater without pretreatment, phase 1, 2015 timescale) and secondary effluent treatment (phase 2, 2035 timescale), • Optimisation of layout (laying at shallow depths, choice of suitable materials, H₂S protection, etc.), • optimisation of treatment system, • Dimensional design of outfall. <p>Specific services provided:</p> <ul style="list-style-type: none"> • Assignment A: Assessment of the initial study and proposal of variants. • Assignment B: Technical and economic comparison of the variants. • Assignment C: Environmental and social management plan (ESMP); detailed design study; tender documents.
MAURITIUS	2009-2010	West Coast Sewerage Project, to deal with sewerage problems on the south-west coast of the island. Studies of the primary network (30 km) and treatment plant (designed for 143 000 PE in the long term): <ul style="list-style-type: none"> • Feasibility study. • Preliminary design of a treatment plant using membrane technology. • Tender documents (FIDIC Yellow Book type). Position: Project Manager.

EGYPT	2007-2010	<p>East Bank Wastewater Project, Cairo Design review, Contract supervision, O & M Supervision of the extension of Gabal El Asfar WWTP – 300 000 m³/d Client: Arab Republic of Egypt Ministry of Housing Contract Engineer.</p>
PALESTINE	2006-2010	<p>North Gaza Waste Water Treatment Plant Design review, tender documents review, tendering assistance and works supervision for the plant – Capacity of 65,300 m³/day (547,000 PE) Client: Palestinian National Authority – Palestinian Water Authority Project Director</p>
SENEGAL	2006-2008	<p>Keur Momar Sarr water treatment plant – Phase 2 Approval of working designs Supervision of works. Capacity: 65 000 m³/d. Cost of works: 35m euros. Project director</p>
ROMANIA	2002-2008	<p>Management and supervision of ISPA contract for Municipality of Arad (300 000 EH):</p> <ul style="list-style-type: none"> • Improvement of undersized, inadequate and obsolete municipal WWTP infrastructure; • Compliance of the effluent discharge characteristics with EU and Romanian effluent standards. <p>Advisor for tender evaluation of the works contracts as Geotechnical and Training Expert.</p>
SERBIA	2004-2007	<p>Veliko Selo water treatment plant, Belgrade. Feasibility study, preliminary design study and tender documents. Capacity of 390 000 m³/d (1.4 million PE). Client: Agency for Building Land and Construction of Belgrade Project Manager.</p>
ALGERIA	2002-2004	<p>Bredeah water desalination plant. Assistance to the owner with definition of a functional schedule, finalisation of the works contract and approval of working design documents. Project Manager.</p>
MONTENEGRO	2003	<p>Podgorica water treatment plant. Feasibility study of the new plant. Capacity of 300 000 PE. Client: Republic of Montenegro Project Manager.</p>
CHINA	2001-2005	<p>Chongqing urban sanitation project. Supervision of works for the entire scheme, comprising: 74 km of 2 x 2 x 3 m culverts, 3 transfer tunnels (diameter 4 m, cumulative length 5 km), 1 siphon beneath the Yangtze river (diameter 6 m, length 950 m), two pumping stations with outputs of 12 and 16 m³/s, and two treatment plants with a total capacity of 1.9 million PE. Investment costs: USD 376 millions Project Director</p>
FRANCE	2002-2005	<p>Ambonne sewage treatment plant, Amiens. Complete supervision and coordination of works on the new 240 000 p.e. treatment plant. Total cost of works: € 40million exc. VAT– 11 different works contracts. Project Manager.</p>

FRANCE	1999-2003	<p>Ambonne treatment plant in Amiens. Complete engineering services (from preliminary design studies to acceptance of works) for the new treatment plant for an equivalent population of 240 000 (42 000 m³/day), with nitrogen and phosphorus treatment and UV disinfection; works contracts. Client: Amiens Métropole Project Manager and representative of the consortium providing the engineering services.</p>
FRANCE	1998-2000	<p>Abbeville treatment plant. Complete engineering services for the new treatment plant for an equivalent population of 80 000, with nitrogen and phosphorus treatment and UV disinfection. Cost of works: 20,5M€ Project Manager.</p>
FRANCE	1998-1999	<p>La Loue treatment plant in Montluçon. Engineering services (detailed design study and assistance with works contracts) for the new treatment plant for an equivalent population of 105 000, with nitrogen and phosphorus treatment. Client: Conseil Municipal de Montluçon-Désertines Project Manager.</p>

DAMS

GUATEMALA	1999	<p>Expert appraisal concerning main conveyance pipes for drinking water in Guatemala City.</p>
MAYOTTE, FRANCE	1997	<p>Gouloué-Kwalé dam. Preliminary and detailed design. Project Manager.</p>
LAOS	1994-1995	<p>Nam Leuk hydropower scheme: detailed design and preparation of tender documents: geological aspects of the structures (rockfill dam, 2 galleries and power plant).</p>
PAKISTAN	1994	<p>Jagran hydropower development scheme. Responsible for design studies (civil engineering and geotechnical aspects) for the underground power plant (80 m long, 16 m high).</p>
VIETNAM	1994	<p>Yali dam: volume of fill 8 M m³, 8 km galleries and 700 MW underground power plant. Expert appraisal of the geological conditions for underground works and project options.</p>
THAILAND	1993-1994	<p>Khiritarn project: feasibility study of works (upper basin excavated in the rock and dam for the lower basin, tunnels and underground power plant) for a reversible pumping scheme (660 MW).</p>
IRAN	1993-1994	<p>Jarreh dam (height = 80 m). Geological and geotechnical detailed design study and preparation of tender documents. Study of seismic hazard: sismotectonic sketch.</p>
BURUNDI	1993-1994	<p>Feasibility study for the hydropower development works at Kabu 16, Kabu 23, Masango and Rushiha. Responsible for design studies (civil engineering, geotechnics).</p>
INDONESIA	1992-1993	<p>Peusangan 4 development scheme comprising an earthfill dam (Height = 130 m), headrace tunnel (4 km), and underground power plant. Responsible for design studies (civil engineering, geotechnics).</p>

BURKINA FASO	1991-1993	<p>Bagré dam (height = 35 m, volume of fill = 3.2 million m³, volume of concrete = 70 000 m³), power plant (16 MW). Cost of works: 76 M€</p> <p>Assistant to the Project Manager, then Project Manager: responsible for all technical aspects, including general coordination with the electromechanical equipment contractors (5 different contracts) and analysis of claims.</p>
MADAGASCAR	1989-1991	<p>Antanifotsy dam (height = 22 m, length = 450 m).</p> <p>Expert appraisal concerning the stability of the structure: geotechnical tests, stability calculations, monitoring of recommended consolidation works.</p>
FRANCE	1989-1990	<p>Caramany dam: earth dam 55 m high, comprising 1.2 million m³ of material.</p> <p>Responsible for detailed design studies of the foundation conditions, drainage system and grout curtain, conditions for exploiting fill materials. Conception study of diversion gallery (excavated diameter 8,65 m).</p> <p>Responsible for studies concerning the use of the fill material and carrying out compacting tests.</p> <p>Responsible for drawing up tender documents.</p>
SRI LANKA	1987	<p>Digili-Oya dam, a 40 m high earthfill structure (450 000 m³).</p> <p>Preliminary design study.</p> <p>Responsible for the geological and geotechnical studies, including reconnaissance works and laboratory tests, and for preparing the report proposing a zoned clay and gneiss structure.</p>
FRANCE	1987-1988	<p>Concrete dams at Saint-Martin de l'Arçon (25 m high), Mas de Xatard and Mas Reig (30 m high).</p> <p>Preliminary studies.</p> <p>Responsible for the geological and geotechnical studies, including reconnaissance works and laboratory tests carried out by subcontractors.</p>
FRANCE	1985-1986	<p>Saint-Géraud dam: 45 m high earthfill structure (450 000 m³).</p> <p>Responsible for geological and geotechnical studies:</p> <ul style="list-style-type: none"> • Geological survey of the excavations and adaptation of the design to actual conditions on site, • Definition of grout curtain, • Definition of areas for exploiting earth and rock materials.
MOROCCO	1983	<p>Hill lakes: feasibility and preliminary design studies for 370 sites.</p> <p>Responsible for the overall feasibility diagnostic and design of each structure.</p>
MOROCCO	1980-1983	<p>Dkhila dam and gallery, Beni Boufrah, Targuist, El Joumoua and Beni Guemil dams: geological studies of large dams (20-45 m high) and of a 2 km long gallery:</p> <p>Responsible for:</p> <ul style="list-style-type: none"> • Defining the geological investigations, preparing tender documents and monitoring the reconnaissance campaign, • Choosing the type of structure for each site.

WASTE

FRANCE	2006-IN PROGRESS	<p>La Trompeuse Landfill (Martinique Island)</p> <p>Feasibility study, detailed design, tenders documents and works supervision for the rehabilitation of a 2Mm³ landfill, including biogas treatment and leachate treatment</p> <p>Project Director</p>
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FRANCE	2004-IN PROGRESS	SYTRAD, Valence. Design and inspection of works for three treatment and composting plants for recyclable household waste and biowaste, with a total capacity of 160 000 tonnes per year. Cost of works: €45 m. Project Director
FRANCE	2000-2006	Biological treatment centre for urban residues from Marseilles. Rehabilitation of existing site (handling 20 million tonnes). Cost of works: 15 million euros. Draft tender documents and monitoring of extensions to the centre (3 million tonnes). Cost of works: 12 million euros. Statutory documents concerning environmentally hazardous installations, preliminary design.
CHINA	2002	Zhejiang Urban Environment Project. Consultant for the design studies for a 25 million tonne landfill at Hangzhou.
MAYOTTE, FRANCE	1999	Hachiké landfill site (400 000 tonnes). Detailed design, tender documents, assistance with contract procedure. Project Manager.

MISCELLANEOUS

SYRIA	2010-2011	Water supplies to Palmyre from the Euphrates river ND1000, 400km supply pipe – 4 pumping stations and a drinking water treatment plant. Installed flow rate 4 m ³ /s – 350,000m ³ /day. Feasibility study, preliminary and detailed design studies. Cost of works: €390 million. Project director
COSTA RICA	2010-2011	Sewerage for the city of San José Design study of the Los Matillos tunnel with a finished diameter of 2.5m to transfer waste water to the treatment plant. Tunnel expert
MAURITIUS	2005-2008	Sewerage project for the town of Plaines Wilhems and its 80,000 inhabitants Supervision of works for the trunk sewer: 70km, 300 to 900mm dia. PERV pipe. Total cost of works: €18 million. Project director
VIETNAM	2002-2003	Ho Chi Minh water supply. In charge of the DN 1800 raw pipe rehabilitation study.
REUNION, FRANCE	1995-1998	West Coast irrigation area. Works to construct the main canal and branch 4, with 17 km of 1600 and 1400 mm diameter pipes and 8 km of 700-900 mm diameter pipes, four 2.5 MW pumping stations and four reservoirs. Cost of works: 31 M€ On-site works manager.
FRANCE	1989-1990	Saint-Gauderic gallery, built with a continuously concreting tunneller. The gallery is 1200 m long with a finished diameter of 2.65 m and has a gate chamber at each end. Cost of works: 3 M€ Project Manager: assistance to the employer in analysing bids and finalising the works contract and general monitoring of works.
MOROCCO	1988-1989	Checking of studies carried out by other consultants: 22 hill dams and Doukkalas main canal (135 km - 35 m ³ /s). Responsible for designing all the dams and for geotechnical studies for the canal embankments.

OMAN	1989	Expert appraisal concerning the development of irrigation areas. Responsible for the water supply system (tapping facilities, canals, electromechanical equipment), based on traditional drainage galleries (falaj).
REUNION, FRANCE	1989	Mafate gallery: 9800 m long with a diameter of 4.65 m (lined). Cost of works: 53 M€ Assistance to the employer in: <ul style="list-style-type: none"> • Analysing bids, • Negotiating with the successful contractor concerning proposed alternatives, • Adapting technical aspects of the project to the alternative adopted (tunneller and placing of concrete segments).
NIGER	1988	Badeguicheri plain (50 000 ha). Mathematical modelling of aquifers. Responsible for the subsurface hydraulics study aimed at ensuring saturation of the alluvial fill below Kaora Abdou dam.
FRANCE	1987	General study concerning the mobilisation of water resources in the west of France and in the Causses region. Responsible for the preliminary analysis, technical and economic comparison of alternatives, geophysical works, exploitation of satellite images, definition of 38 deep wells.
SYRIA	1985-1986	Development of the lower valley of the Euphrates: second stage of wide-scale drainage. Responsible for all hydrogeological works: computerised sizing of the drainage system, definition of pumping stations (285 structures), preparation of tender documents for the works, progress reports on negotiations for the funding organisations.
SYRIA	1983-1984	Development of the lower valley of the Euphrates, first stage of wide-scale drainage. Responsible for monitoring works at 74 pumping stations (boreholes and electromechanical equipment).
FRANCE	1985	Mathematical modelling of aquifers for the Salanque plain (25 000 ha) and lower valley of the river Aude (23 000 ha). Study of consequences for the projected works: pumping, channel, dam-lock.
YEMEN	1984-1985	Surdud farm irrigation area. Responsible for drilling works, including definition of equipment, technical specifications and choice of local contractors, supervision of works (drilling, civil works and electromechanical equipment for the pumping stations), and for commissioning of the works.
MADAGASCAR	1985	Morondava sugar-growing area. Responsible for drilling works: definition of tapping facilities and supervision of works. Commissioning reports to the funding organisations.

EMPLOYMENT RECORD

SINCE 2011	Director of the Water and Urban Development business unit of Sogreah Consultants, Artelia group
2006-2010	Head of the "Project Management and Execution" division of the Urban and Industrial Environment business unit of Sogreah Consultants
2000-2006	Project Director in the Water, Sewage and Solid Waste section of Sogreah's Consulting Branch

1997-2000	Principal Engineer in the Water, Sewage and Solid Waste section of Sogreah's consulting Branch
1991-1996	Principal Engineer in the Civil Engineering Section of Sogreah's Department of Dams and Hydropower.
1983-1991	Design Engineer with the Large Structures Section of the Compagnie du Bas-Rhône Languedoc (GERSAR).
1983	Lecturer at the National State Public Works School (Lyons).
1980-1983	Design Engineer with the Ministry of Public Works, Morocco.

PROFESSIONAL MEMBERSHIP

- Member of the French Committee on Large Dams.