

PETROLEUM HISTORY SOCIETY –
OIL SANDS ORAL HISTORY PROJECT

**PROVINCIAL ARCHIVES OF ALBERTA
HOLDINGS**

KARL ADOLF CLARK FONDS

No.: PR0217

by Adriana A. Davies, CM, PhD

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RESEARCH SPONSOR:

ATHABASCA OIL SANDS CORP.

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1. KARL ADOLF CLARK FONDS DESCRIPTION

LEVEL OF DESCRIPTION:

Fonds

No.: PR0217

TITLE: KARL CLARK FONDS

CREATOR: Karl Clark

DATE RANGE: 1924-1966

EXTENT:

0.94 m of textual records and other records

Also includes 6 photograph albums, ca. 140 negatives, 40 photographs, 10 maps and 2 cinefilms.

ADMINISTRATIVEHISTORY/BIOGRAPHICAL SKETCH:

Karl Adolph Clark was born October 20, 1888 in Georgetown, Ontario to Malcolm Sinclair and Adelaide Louise (nee McLaughlin) Clark. Karl Clark attended Harbord Collegiate Institute in Toronto, Ontario from 1900 until 1904. In 1910 he graduated from McMaster University with a Bachelor of Arts degree and then graduated with a Master of Arts degree in chemistry in 1912. Three years later he received his PhD in Physical Chemistry from the University of Illinois. Clark married Dora Anne Wolverton on September 3, 1919. Together they had four children, Frances, Mary, Malcolm and Nancy. From 1916 until 1920 Clark worked with the Geological Survey of Canada and the Mines Branch in Ottawa, Ontario. He later joined the Research Council of Alberta in 1920, working on the Athabasca oil sands. When the Alberta Research Council was suspended around 1932, Clark became Professor of Metallurgy at the University of Alberta. From 1935 until 1937 he was granted a leave of absence to work on oil reservoir engineering problems for Trinidad Leaseholds Limited, a British-owned oil firm in Trinidad. After his leave of absence he returned to the University to teach. In 1945 he was appointed head of the Department of Mining and Metallurgy at the University of Alberta, a post he held until his retirement in 1954. When the Alberta Research Council was revived Clark resumed his work supervising the oil sands program while teaching at the University and after his retirement. Clark also worked as a consultant for Socony-Vacuum Oil Company from 1952 until 1954. In 1955 Clark was awarded the Gold Medal of the Professional Institute of Public Service of Canada for meritorious achievement. He also served as Acting Chairman of the Petroleum and Natural Gas Conservation Board for two short periods. Clark moved to Saanichton, British Columbia in 1964. He died in Victoria in 1966.

SCOPE AND CONTENT:

Fonds consists of records pertaining to Clark's work with the Athabasca oil sands including field diaries, correspondence, reports, maps and publications. Fonds has been divided into the following series: Field diaries; Correspondence; Photographs; Reports; Scientific data; Papers and publications; Athabasca tar sands developments; Miscellaneous material; and Maps.

SOURCE OF TITLE:

Title based on the content of the records.

ACCESS CONDITIONS:

None

USE CONDITIONS:

Permission for use required. Subject to the Copyright Act.

FINDING AIDS:

File list is available.

INCLUDES THE FOLLOWING ACCESSIONS:

PR1968.0015

ACCRUALS:

Further accruals are not expected.

ASSOCIATED MATERIAL:

Other records pertaining to Karl Clark are located at the University of Alberta Archives in Edmonton, Alberta.

RELATED RECORDS:

Additional records pertaining to Karl Clark are located in accessions PR1965.65 and PR1974.390 at the Provincial Archives of Alberta. The photographs in the Karl Clark fonds overlap with those found in the D.S. Pasternack fonds, accession PR1969.0114. D.S. Pasternack worked with Karl A. Clark to develop the first pilot plant to extract oil from bituminous sand and he co-authored an article with Clark entitled Hot Water Separation of Bitumen from Alberta Bituminous Sands.

GENERAL NOTE:

The information in the Administrative history/Biographical sketch was obtained from The Canadian Who's Who, Vol. IX: 1961-1963.

SUBJECT HEADINGS: Oil sands -- Athabasca

RELATED FILES: [Display FileList](#)

2. SIGNIFICANCE OF FONDS

The Karl A. Clark Fonds are important because Clark pioneered oil sands extraction and was instrumental in developing a process leading to industrial exploitation. Clark was hired by University of Alberta President Henry Marshall Tory, who wished to see Alberta's resources developed. He arrived in Edmonton on September 1, 1920 and became the first Research Professor at the University. The Research Department took provincial affiliation in January 1921 and became the Scientific and Industrial Research Council of Alberta (it became the Research Council of Alberta in 1930). This joint government/university effort enabled research to continue during the Great Depression when funds and jobs were cut.

Clark's main focus was to investigate separation processes for the bituminous sands. Initially, he was focused on it as a road building material but, eventually, he saw it as a source of oil. He found that, when the bituminous sand was heated with water, the oil separated into a surface froth. By 1922, Clark had developed a model separation plant with the help of his full-time assistant Sidney Martin Blair. By 1925, he would go on to set up a separation processing plant in Dunvegan. Through the Research Council, in 1926, Clark and Blair published *The Bituminous Sands of Alberta* and this was tabled in the Alberta Legislature. A direct result was the first commercial attempt at development in 1930. An American investor, Max Ball, through his company Canadian Northern Oil (later known as Abasand Oils) took out leases on the Horse River (Bituminous Sands Permit No. 1) and south on the Athabasca River. He was followed three years later by Robert Fitzsimmons, who opened the International Bitumen Company (later called Oil Sands Ltd). Both companies played an important role in oil sands development and Clark's career. Clark's work was patented, in 1929, by the Research Council.

Clark's career was connected with almost every oil sands exploitation effort until 1950. In 1929, the Research Council assigned \$30,000 for a federal-provincial two-year project with Clark as director. The Federal Mines Branch, under Sidney Ells, oversaw the mining, and the Research Council managed construction of a separation plant. Clark recycled the Dunvegan plant transporting it by train to Waterway and, then, shipping it on the Clearwater River to the quarry site Ells had chosen for reconstruction. This plant allowed them to address a range of problems and, by the end of summer 1930, they succeeded in producing 15,000 gallons of oil comparable to international standards.

Problem-solving continued until 1933 when the Research Council shut down because of lack of funding. Clark's position at the University had been secured when Tory insisted on a joint Research Council/University appointment. From 1935-37, Clark worked as an oil research consultant with Trinidad Leaseholds. Blair had gone on to work in the company's London head office and arranged the job for him. Clark returned to the University as a professor of metallurgy replacing Alan Cameron (he eventually became Department Chair). He was able to return to tar sands research when, in 1938, Consolidated Mining and Smelting Company (CMS) began to investigate the tar sands as

a fuel source for northern mining projects. In 1939, Clark went to the Chapman Camp in Kimberley, BC, but, unfortunately, the project was not continued.

The two commercial operations, Abasand and International Bitumen, had been moving slowly towards commercial production. World War II would provide some impetus. In 1940, the federal government set in motion activities to investigate Canada's oil reserves through the Wartime Industrial Control Board (WICB). This included the tar sands. In November 1941, the Abasand plant was destroyed by fire. CMS came back into the picture when, on the strength of the WICB report, the federal government commissioned them to complete a set of studies that would result in commercial production. In 1942, Clark was asked to create a report on progress. The province also decided to move ahead and, in spring 1943, the Research Council was reconstituted under N. E. Tanner, Minister of Lands and Mines. This meant Clark's return to full-time research on tar sands through the Council. Because Max Ball was still involved with the Abasand plant, he arranged with the Council to have Clark do research for Abasand. Clark created another experimental plant in the North Lab of the University of Alberta and was able to completely determine tar sand chemical properties. The federal government decided to provide funding for Abasand excluding Clark, the Research Council and Ball. The provincial government refused to be left out and chose, in 1944, to invest in a joint venture with Oil Sands Limited, now owned by Lloyd R. Champion (when the company ran into financial difficulties in 1942, he purchased it from Fitzsimmons).

It would be the Bitumount project, supported by the Research Council, with Clark's research expertise. that would make the breakthrough leading to commercial exploitation. The plant's completion in summer 1949 resulted in a grand opening attended by all Alberta MLAs. Sidney Martin Blair's 1950- report titled *The Development of the Alberta Bituminous Sands* was the capstone of a provincially- study on the commercial viability of the tar sands. It revealed that the economics were right for setting up an industry. It was at this time, that the term "oil sands" came into current use instead of tar sands. In 1951, an international symposium was organized by the Government of Alberta to reveal their findings. In 1953, the Great Canadian Oil Sands (GCOS) consortium was created based on Abasand Oils, Canadian Oils Ltd., Oil Sands Ltd. and Sun Oil Co. Clark was an advisor to this group until his death in 1966.

This summary of Clark's involvement in oil sands research and development is mirrored in the Clark fonds, which reflect many aspects of his research. They include field diaries, correspondence, reports, maps and publications. Additional records pertaining to Karl Clark are located in accessions PR1965.65 and PR1974.390 at the Provincial Archives of Alberta. The photographs in the Karl Clark Fonds overlap with those found in the D.S. Pasternack Fonds, accession PR1969.0114. D.S. Pasternack worked with Karl A. Clark to develop the first pilot plant to extract oil from bituminous sand and he co-authored an article with Clark titled "Hot Water Separation of Bitumen from Alberta Bituminous Sands."

Clark was extremely well organized and also an excellent writer who could explain technical topics in relatively simple language. There are some hand-written field notebooks but he most often created "diaries" that were typewritten and bound. A number of these exist and provide information on his activities from the early work on road materials to the slightly later research on extraction techniques. He notes all of the findings including percentages for water/bitumen/sand in separation experiments. A number of diaries include black and white photographs (which are glued onto the pages) and could be reprinted in facsimile editions. The photographs include captions about particular formations, for example, in a picture titled "Bitumen Seepage," he writes: "the bituminous sand is so super saturated with bitumen and water at this point that the material in the face shakes like jelly when struck." Other files include important correspondence with the who's who of people involved in research and development. Various important reports are found in the fonds as well as maps and other documents.

3. DESCRIPTION OF FONDS IN BOX 1

PR1968.015/1: Separation Plant Operation During 1924, Years: 1924

PR1968.015/2: Diary and Miscellaneous information re: Experimental Road Construction St. Alberta Trail, Years: 1925

PR1968.015/3: Diary re: Observations of Road Construction Methods, Years: 1926

PR1968.015/4: Diary. Investigation of Bituminous Sands and related Matters, Waterways and Athabasca River, Years: 1927

PR1968.015/5: Diary of trips to Waterways, Years: 1929

PR1968.015/6: Current History of Events Relating to Bituminous Sand Development Part I, Years: 1929

PR1968.015/7: Current History of Events Relating to Bituminous Sand Development Part II, Years, 1929

PR1968.015/8: Diary. Season at Bituminous Sand Separation Plant, Clearwater River, Years: 1930

PR1968.015/9: Field Notebook, Years: 1949

PR1968.015/10:Field Notebook, Years: 1942-1947

PR1968.015/11:Report on Operations at Bitumount Separation Plant, Years: n.d.

PR1968.015/12:Field Notebook, Years: 1954

PR1968.015/13:Correspondence re: Rock Asphalts, Bituminous Sands Road Construction, Years: 1924-1926

PR1968.015/14:Wm. S. Barnickel & Co., Manufacturing Chemists, St. Louis, M.D. to Karl Clark, Years: 1929

PR1968.015/15:Correspondence re: Bituminous Sand Separation Program, Years: 1929-1931

PR1968.015/16:Max W. Ball to Karl Clark. Letter and copy of Affidavits – Sending of Equipment of Model Separation Plant to Canada, Years: 1930

4. DESCRIPTION OF FONDS IN BOX 2

PR1968.015/17:J. Harvie, Deputy Minister, Dept. of Lands and Mines, Alberta to Karl Clark (Right To Use an Area of Bituminous Sands at McMurray for Experimental Research), Years: 1935

PR1968.015/18:John Conrey, director, Mines Branch, Ottawa to Karl Clark. Letter concerning analysis of samples of gas from the Pelican wells on the Athabasca River, Years: 1953

PR1968.015/19:Letter of congratulations re: 1955 Gold Medal award by the Professional Institute of Canada from Prime Minister Louis St. Laurent to Karl Clark, Years: 1955

PR1968.015/20:Gordon Taylor, MLA. To Karl Clark, Years: 1955

PR1968.015/21:Letters concerning the Federal Project of Building a Separation Plant in Fort McMurray, Years, 1943-1944

PR1968.015/22:Album of Photographs, A3501-3535, Years: 1924-1926, OCS Box1 (The album is in OCS Box and the Negs are in Box2, 17 negs)

PR1968.015/23:Album: Photos of Bituminous Sand Plant, A3536-3546, 3567, Years, 1930, 21 negs and 2 photos

PR1968.015/24:Album: Photos taken in 1931 Fitzsimmons' Plant, in the North, Road Work and Commercial Cartage Plants. A3547-3554, Years: 1931, 32 photos and 12 negs

PR1968.015/25:Album. Pictures taken in Trinidad, Years: 1938, 66 photos and 1 neg

PR1968.015/26:Album. Pictures taken in Trinidad A3555, Years: 1938, 48 photos and 1 neg

PR1968.015/27:Photos of the Plant at Bitumount, Alberta A3556-64, 2 volumes, Years, 1947-1948 125 photos and 66 negs

PR1968.015/28:Pages containing Photos of the Plant at Bitumount, Alberta A3565, 2 volumes, Years: c194832 photos and 15 negs

5. DESCRIPTION OF FONDS IN BOX 3

PR1968.015/29:Photos of Karl Clark and Staff of the Alberta Research Council, Years: 1948, 4 photos

PR1968.015/30:*Edmonton Journal* Press Photo of Karl Clark, Years: c1952, 1 photo

PR1968.015/31:*Edmonton Journal* Press Photo of Karl Clark, Years: 1951m 2 photos

PR1968.015/32:Photo of Karl Clark at Canadian pacific Airlines Airport, Fort McMurray, A3566, Years: c1952, 1 photo

PR1968.015/33:Cine Film. Karl Clark family. 8 mm B/W, Years: n.d., vault 20

PR1968.015/34:Cine Film Re: Plant Operations 16 mm B/W, Years: n.d., Missing September 7, 1983.

PR1968.015/35:Progress Reports Bituminous Sand Investigations, Years: 1942-1943

PR1968.015/36:Progress Reports Bituminous Sand Investigations, Years: 1943-1944

PR1968.015/37:Bituminous Sand Investigations, Years: 1944-1947

PR1968.015/38:Bituminous Sand Investigations, Years: 1947-1951

PR1968.015/39:Experiments with Fresh Oil Sand Out Of The Quarry Bids At Bitumount, Years: 1948

PR1968.015/40:McMurray Formation. Progress Report by G. A. Collins, Years: 1955, Box 3 & OC, 1 plan

PR1968.015/41:Compiled by Karl Clark – Research Work, Years: 1915-1963, Box 3, OC, 7 plans

PR1968.015/42:"Bituminous Sands of Alberta" Article published in *Monetary Times*, Years: 1930

PR1968.015/43:"Work of the Road Materials Division Research Council of Alberta," Years: 1930

PR1968.015/44:"Bituminous Sands in Northern Alberta, Canada" Typescript, Years: 1931

PR1968.015/45:"The government Bituminous Sand Quarry and Separation Plant" Typescript, Years: [1931]

PR1968.015/46:"Can Oil Be Recovered from the Alberta Bituminous Sands in Situ?" Typescript, Years: [1935]

PR1968.015/47:"Successful Pilot Plant Operations Advance the Status of Athabasca Bituminous Sands" Typescript, Years: [1950]

6. Description of Fonds in Box 4

PR1968.015/48: "Matters Needing Further Attention When the Bitumount Plant is Readied for Further Operation" Typescript, Years: 1950

PR1968.015/49: "Athabasca Oil Sands" A brief by the Research Council of Alberta for Presentation to the Borden Royal Commission on Energy Resources. Mimeograph, Years: 1958

PR1968.015/50: Newsclippings, Years: 1951-1952

PR1968.015/51 Newsclippings, Years: 1953-1955

PR1968.015/52: Newsclippings, Years: 1956-1960

PR1968.015/53: Newsclippings, Years: 1960-1964

PR1968.015/54: Newsclippings, Years: 1964-1966

PR1968.015/55: "Oil in the Splendid Sixties" by Victor Lauriston. Article published in *MacLean's Magazine*, Years: 1921, 1 neg

PR1968.015/56: "the Recovery of Oil from the Athabasca Oil Sands" by J. M. McClare. Article published in the *Canadian Mining Journal*, Year: 1935

PR1968.015/57: Obituary file: Karl Clark *Edmonton Journal*, Years: 1966

OC:

PR1968.015/58: Athabaska River, McMurray to Chipewyan. Topographic Survey of Canada, Years: 1922, 1 plan

PR1968.015/59: Bituminous Sands of Northern Alberta. Canadian Department of Mines. Originally accompanying report No. 632 by S.C. Ells. Eight sheets. Annotated. Years; 1925, 4 plans

PR1968.015/60: Alberta Sheet No. 74. Department of Lands and Forests Compiled from Aerial Survey, Years: [1952]

LIST OF PHOTOS/FILMS

A3501 (Clearwater River Castle, Alberta)
A3502 (Hammerstein Lease)
A3503 (Ells R. M. 456)
A3504 (Steamboat "Athabasca")
A3505 (The "Athabasca River" Steamboat)
A3506 (Slave River Dock)
A3507 (Fitzgerald)
A3508 (Half Way House)
A3509 (Ells River)
A3510 (Bitumous Sand)
A3511 (Brine Storage Tanks)
A3512 (Horse River Salt Works)
A3513 (Steamer Entering McMurray)
A3514 (Horse River Shaft)
A3516 (Christina River Trench)
A3517a (Fort McKay)
A3517b (Fort McKay)
A3518 (Fort McKay)
A3520 (St. Albert Trail)
A3521 (St. Albert Trail)
A3522 (Road Maintenance)
A3523 (Road Maintenance)
A3524 (Road Maintenance)
A3525 (Bitumous Sand Separation Plant, Edmonton)
A3526 (Bitumous Sand Plant, Edmonton)
A3527 (Bitumous Sand Plant, Edmonton)
A3528 (Bitumous Sand Plant, Edmonton)
A3529 (Unloading Bitumous Sand)
A3530 (Bitumous Sand Plant)
A3531 (Bitumous Sand Plant, Edmonton)
A3532 (Bitumous Sand Plant Cook House)
A3533 (Road Maintenance)
A3534 (Power Plant)
A3535 (University of Alberta University Radio Orchestra)
A3536 (Bitumous Separation Plant)
A3537 (Bitumous Sand Plant)
A3538 (Filling Platform)
A3539 (Quoit Competition)
A3540 (Bitumous Sand Plant)
A3541 (Cord Wood Railway)
A3542 (Clearwater River Plant Site)
A3543 (Absher's Camp)

A3544 (Absher's Camp)
A3545 (Absher's Camp)
A3546 (Bitumous Sand Plant)
A3547 (Waterway Separation Plant)
A3548 (Fitzsimmons Camp)
A3549 (Commercial Cartage Company)
A3550 (Commercial Cartage Company)
A3551 (Commercial Cartage Company)
A3552 (Crown Paving Company)
A3553 (Crown Paving Company)
A3554 (Elbow River Dam, Calgary, Alberta)
A3555 (Dr. K. Clark)
A3556 (Abasand Oils Limited)
A3557 (Bitumount Plant)
A3558 (Oil Sands Development)
A3559 (Oil Sands Development)
A3560 (Oil Sands Development)
A3561 (Oil Sands Development)
A3562 (Oils Sands Development)
A3563 (Bitumount Labratory)
A3564 (Bitumount Plant)
A3565 (Bitumount Plant)
A3566 (The Canadian Pacific Airlines, Fort McMurray, Alberta)
A3567 (Portrait of Mrs. Karl Clark)
A3568 (Portrait of Dr. Karl Clark)
A3569 (Portrait of Dr. Karl Clark)
A5559 (S. C. Ellis and Paul Schmidt)
A5560 (Packing dogs with Tar Sands, Ells River)
A5561 (International Bitumen Co. Ltd.)
A7053 (Oil Sands Project)
A7054 (Oil Sands Project)
A7055 (Road Work)
A7056 (Sign Factory and Staff)
A7057 (Road Work)
A7058 (Oil Sands Project)
A7059 (Oil Sands Project)
PR1968.0015.0033 (Karl Clark: Family Film)¹

¹ Provincial Archives Alberta Online, Karl A. Clark fonds, URL: URL:
<https://hermis.alberta.ca/paa/Details.aspx?DeptID=1&st=karl+clark&ReturnUrl=%2fpaa%2fSearch.aspx%3fDeptID%3d1%26st%3dkarl%2bclark&dv=True&ObjectID=PR0217>