

87-0005/020/06

PROPRIETARY

IMPERIAL OIL LIMITED
RESEARCH PROJECT SHEETS
OWN ACCOUNT
FOR 1980

JANUARY 1980

COPY NO. 4

1980 RESEARCH PROJECT

- PLANNING GROUP Solar Energy PROJECT NO. NE-8
- PRODUCT LINE Solar Heating NEW ☐ CONTINUING ☒
- TITLE Liquid Collector Technology BILLING Natural Resources Coord.
- Solar Budget
- CATEGORY A B C ☒ D E F BUDGET (1980) 250 k\$
- . ORIGINATOR/DEPT. Solar Research Group

- BUSINESS/TECHNICAL OUTLOOK

Manufacture and sale of an efficient liquid collector(s) is potentially a major new business venture for the future. Collectors are a large part (~35%) of the cost of a solar energy system installation.

- LONG RANGE OBJECTIVES/DEFINITION OF NEED

Determine best liquid collector design/systems for Canada to develop a new business venture for Imperial in solar energy.

- 1980 KEY RESEARCH OBJECTIVES

1. Identify and quantify key liquid collector design parameters.
2. Build prototypes or buy commercially available models for performance evaluation.

- CURRENT STATUS/RECENT ACCOMPLISHMENTS

1. Completed construction of the liquid collector test facility.
2. Demonstrated excellent performance of facility.
3. Evaluated and compared the efficiencies using Ashrae standards of 4 different collectors.
4. Started to systematically evaluate key design parameters.

- INCENTIVES/JUSTIFICATION

Canadian made collectors manufactured on a large scale could compete successfully.

PRODUCT LINE None

MAJOR OBJECTIVE Determine best collector design/systems for Canada to
develop a new business opportunity in solar energy.

RESEARCH COSTS - k\$				ECONOMIC JUSTIFICATION				TOTAL
3 PRIOR YEARS	1978	1979 EST.	1979 BUDGET	1980	1981	1982	AT COMPLETED	(YEAR)
			<u>225</u>	<u>250</u>				

PAYOUT (YEARS) k\$ BENEFIT (1st, 2nd, 3rd, YEARS AFTER COMPLETION)

KEY ASSUMPTIONS Program is at too exploratory a stage to meaningfully estimate benefits.

- Imperial programs will earn license free rights to Exxon solar technology.
- Imperial will decide on a solar business entry in 1983+.

IMPERIAL SCORING				(WORLD MUTUAL PROJECTS)			
CRITERIA	PROFILE	WEIGHT- ING	HI	MED	LO	AREA	POTENTIAL
							HI
URGENCY	()					EXXON POLICY	
SCOPE	()						
CONSISTENCY	()						
PROBABILITY OF SUCCESS	()					OPERATIONS SUPPORT	
RESEARCH PERIOD	()						
RESEARCH COSTS	()						
COST TO EXPLOIT	()						
PAYBACK PERIOD	()					TECHNICAL KNOWLEDGE	
BENEFIT: COST	()						
RESEARCH COMPATIBILITY	()					IMPERIAL INTEREST	
TECHNICAL KNOWLEDGE	()						
SCORE							

OTHER JUSTIFICATION

PROJECT RATING

PRIORITY

BENEFIT COST RATIO

1980 RESEARCH PROJECT

- | | | |
|--------------------|--|---|
| • PLANNING GROUP | Solar Energy | PROJECT NO. NE-9 |
| • PRODUCT LINE | Solar Heating | NEW <input type="checkbox"/> CONTINUING <input checked="" type="checkbox"/> |
| • TITLE | Air Collector Technology | BILLING Natural Resources Coord. |
| CATEGORY | A B C <input checked="" type="radio"/> D E F | - Solar Budget |
| | | BUDGET (1980) 200 k\$ |
| • ORIGINATOR/DEPT. | Solar Research Group | |

- BUSINESS/TECHNICAL OUTLOOK

Manufacture and sale of an efficient competitive air collector(s) vs liquid collector(s) is potentially a major new business venture, as air collectors can be made lighter and cheaper.

- LONG RANGE OBJECTIVES/DEFINITION OF NEED

Determine best air collector design/systems for Canada to develop a new business venture for Imperial in solar energy.

● 1980 KEY RESEARCH OBJECTIVES

1. Identify key air collector design parameters.
2. Define prototype designs for performance evaluation.

● CURRENT STATUS/RECENT ACCOMPLISHMENTS

1. Developed a computer simulation model of a duct-type air collector.
2. Screened design parameters using this model.
3. Designed a laboratory comparator for testing min-collectors.

● INCENTIVES/JUSTIFICATION

Canadian made collectors manufactured on a large scale could compete successfully.

PRODUCT LINE None

MAJOR OBJECTIVE Determine best collector design/systems for Canada to develop
a new business opportunity in solar energy.

					ECONOMIC JUSTIFICATION			TOTAL
RESEARCH COSTS - k\$					1980	1981	1982	AT COMPLETED YEAR
3 PRIOR YEARS	1978	1979 EST.	1979 BUDGET					
			50		200			

PAYOUT (YEARS) k\$ BENEFIT (1st, 2nd, 3rd, YEARS AFTER COMPLETION)

KEY ASSUMPTIONS Program is at too exploratory a stage to meaningfully estimate benefits.

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- Imperial will decide on a solar business entry in 1983+.

IMPERIAL SCORING		(WORLD MUTUAL PROJECTS)					
CRITERIA PROFILE		WEIGHT- ING	HI	MED	LO	AREA	POTENTIAL
							HI MED
URGENCY	()					EXXON POLICY	
SCOPE	()						
CONSISTENCY	()						
PROBABILITY OF SUCCESS	()					OPERATIONS SUPPORT	
RESEARCH PERIOD	()						
RESEARCH COSTS	()						
COST TO EXPLOIT	()						
PAYBACK PERIOD	()					TECHNICAL KNOWLEDGE	
BENEFIT: COST	()						
RESEARCH COMPATIBILITY	()					IMPERIAL INTEREST	
TECHNICAL KNOWLEDGE	()						
		SCORE					

OTHER JUSTIFICATION

PROJECT RATING

PRIORITY

BENEFIT COST RATIO

PRODUCT LINE None

MAJOR OBJECTIVE Develop an annual heat storage system to transfer excess summer heat to winter use.

RESEARCH COSTS - k\$			ECONOMIC JUSTIFICATION				TOTAL AT COMPLETED (YEAR)
3 PRIOR YEARS	1978	1979 EST.	1979 BUDGET	1980	1981	1982	
			125	200			

PAYOUT (YEARS) k\$ BENEFIT (1ST, 2nd, 3rd, YEARS AFTER COMPLETION)

KEY ASSUMPTIONS Program is at too exploratory a stage to meaningfully estimate benefits.

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CRITERIA PROFILE	IMPERIAL SCORING					(WORLD MUTUAL PROJECTS)	
	WEIGHT- ING		HI	MED	LO	AREA	POTENTIAL
URGENCY	()					EXXON POLICY	HI MED
SCOPE	()						
CONSISTENCY	()						
PROBABILITY OF SUCCESS	()					OPERATIONS SUPPORT	
RESEARCH PERIOD	()						
RESEARCH COSTS	()						
COST TO EXPLOIT	()						
PAYBACK PERIOD	()						
BENEFIT: COST	()					TECHNICAL KNOWLEDGE	
RESEARCH COMPATIBILITY	()						
TECHNICAL KNOWLEDGE	()					IMPERIAL INTEREST	
		SCORE					

OTHER JUSTIFICATION

PROJECT RATING
PRIORITY

BENEFIT COST RATIO