



# Case Study

**SPRING/FALL 2021**

Design & Accounting Exam–Canada  
EXAM RETDAC

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## Canadian Exam Case Study – Course DA Retirement

### National Oil Company Background

National Oil Company (NOC) is a large, well-established company that services oil wells all over the country of Gevrey. NOC has been in existence for over 30 years and has approximately 3,000 full-time salaried and union hourly employees and up to a further 2,000 non-skilled seasonal employees during the non-winter months. Approximately one-half of the seasonal employees return for another season. The full-time workforce is reasonably stable, but turnover in the last 5 years has been greater than desired due to competitors recruiting NOC's employees.

Normally, an undergraduate degree is a minimum requirement to obtain entry to the salaried workforce and many employees have graduate degrees. About half of NOC's salaried employees are recruited directly from university with the other half coming from competitors.

The company's financial position varies with the price of oil. As oil prices rise, oil companies become increasingly active and in turn require the services of NOC. Conversely, activity slows as oil prices drop. Despite this, the company is usually in a taxable position.

NOC has managed to be successful by staying on the cutting edge of technology. NOC prides itself on being state of the art in processes and software relevant to its industry. This has helped it to stave off competition from both inside and outside of Gevrey. Although NOC is the largest player in the industry within Gevrey, there are larger players from outside of the country, with which NOC has to compete. From time to time, there are rumors of a takeover of NOC.

### Country of Gevrey Background

Gevrey is a modern developed country with a simplified tax system. Both corporations and individuals are subject to income tax at a flat rate of 40%. Reasonable operating expenses, including contributions to Eligible Retirement Plans (ERPs), reduce taxable income.

No pension legislation exists apart from the rules outlined herein.

Rules that apply to gain ERP status are as follows:

#### *Defined Benefit Plans (DB ERPs)*

- Employer contributions may not exceed those recommended by an actuary, in accordance with generally accepted actuarial practice
- Employer contributions are an eligible expense to reduce the employer's taxable income
- Periodic pensions may not exceed \$3,000 per annum for each year of service regardless of form or commencement age
- Periodic pensions cannot commence prior to age 55
- Investment earnings generated by the ERP pension fund are not taxable
- Pension payments are taxed as received in the hands of the recipient
- No employee contributions are permitted
- Plan sponsors have unconditional rights to a refund of surplus assets

### *Defined Contribution Plans (DC ERPs)*

- Employer contributions for any individual plan member cannot exceed \$20,000 annually
- Employer contributions are an eligible expense to reduce the employer's taxable income
- Investment earnings generated by the ERP pension fund are not taxable until withdrawn
- Benefit distributions are taxed as received in the hands of the recipient
- Employer contributions may or may not be dependent on employee contributions
- Individuals may contribute up to \$20,000 annually
- Such contributions are tax deductible to the individual

The tax assistance available under each of the above two arrangements does not depend on the extent of participation under the other one. For example, an individual could participate in a DC ERP and, if eligible under the plans' rules, also a DB ERP of his or her employer.

### *Supplemental Retirement Plans (SRPs)*

Contributions to a retirement plan that does not meet ERP status are not tax-deductible. Benefits paid to participants under such plans are tax deductible to the company and are taxable to participants, when paid to participants. Such a plan is known as a Supplemental Retirement Plan (SRP). An example of an SRP is a plan that restores the benefits lost by the imposition of the ERP maximums.

### *Retiree Health Care Plans*

Employers in Gevrey may provide health care benefits to retirees and their spouses through a separate plan which is not intended to qualify for ERP status. Benefits (including insurance premiums) paid under such plans are tax deductible to the company when paid on behalf of participants. Benefits payable as an indemnity for health related services are not taxable to plan participants at any time.

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No social security pension system exists in Gevrey and there are no state-provided life or health care benefits.

For financial reporting purposes, Gevrey has adopted International Accounting Standard (IAS) 19, rev. 2011.

Gevrey has a well-developed investment market with substantial trading in government bonds, corporate bonds, and equities.

### **Summary of National Oil's Retirement Benefits**

NOC maintains two retirement plans:

1. Pension Plan: final-average pay defined benefit ERP for its full-time employees;
2. Retiree Health Benefit Program: lifetime coverage for full-time employees retiring with the company.

Part-time and/or seasonal employees are not covered under either plan.

## National Oil Pension Plan

### Key Plan Provisions

Eligibility	Immediate
Vesting	100% after 5 years of service
Normal Retirement Age	65
Early Retirement Age	55 with 5 years of service
Earnings	Base pay, excluding overtime and bonuses
Best Average Earnings	Average annual earnings during 60 consecutive months in which earnings were highest
Benefit Service	One year credited for any calendar year in which 1,000 or more hours are worked; otherwise zero
Normal Retirement Benefit	2% of Best Average Earnings times years of Benefit Service, subject to tax system maximum
Early Retirement Benefit	Benefit calculated as under the Normal Retirement Benefit formula using Best Average Earnings and service as of date of calculation  Normal Retirement Benefit reduced by 0.25% per month that early retirement precedes age 62
Form of Benefit	If married, 50% joint & survivor annuity without reduction  If not married, single life annuity
Optional Forms of Benefit	None
Indexing	None
Termination Benefit	Lump sum equal to actuarial present value of Normal Retirement Benefit
Pre-Retirement Death Benefit	Lump sum equal to actuarial present value of Normal Retirement Benefit payable to named beneficiary
Disability Benefit	None

## National Oil Pension Plan

Demographic Summary as of January 1, 2021

		Service (Years)					Totals	
		< 5	5-10	10-15	15-20	> 20		
<b>Age (Years)</b>	< 25	# Participants	50	10	-	-	-	60
		Average Salary	45,000	50,000	-	-	-	45,800
	25-35	# Participants	410	100	20	-	-	530
		Average Salary	62,000	75,000	72,000	-	-	64,800
	35-45	# Participants	320	170	140	90	20	740
		Average Salary	74,000	87,000	94,000	98,000	112,000	84,700
	45-55	# Participants	210	130	150	190	190	870
		Average Salary	72,000	86,000	95,000	101,000	112,000	93,100
	55-65	# Participants	130	100	100	150	270	750
		Average Salary	70,000	82,000	90,000	98,000	110,000	94,300
	> 65	# Participants	20	30	30	30	50	160
		Average Salary	64,000	82,000	92,000	100,000	116,000	95,600
	Totals	# Participants	1,140	540	440	460	530	3,110
		Average Salary	67,400	82,600	92,300	99,400	111,400	85,800
	Average Age		47.1					
	Average Service		10.8					
	Average Salary		85,800					

	Actives	Pensioners/ Beneficiaries	Total
<i>Participants as of January 1, 2020</i>	<b>3,050</b>	<b>1,705</b>	<b>4,755</b>
- New Entrants/Rehires	310	-	310
- Terminated Nonvested	(80)	-	(80)
- Terminated Vested (Lump Sum Cashout)	(50)	-	(50)
- Retirement	(115)	115	-
- Death w/ Beneficiary	(5)	(17)	(22)
- Death w/o Beneficiary	-	(8)	(8)
- Net change	60	90	150
<i>Participants as of January 1, 2021</i>	<b>3,110</b>	<b>1,795</b>	<b>4,905</b>

**National Oil Pension Plan**  
Historical Actuarial Valuation Results

	2020	2021
<b>Participant Summary – January 1</b>		
Active Participants		
(a) Count	3,050	3,110
(b) average age	47.2	47.1
(c) average service	10.9	10.8
(d) average future working lifetime	11.8	11.9
(e) average future working lifetime to vesting (for those not)	2.5	2.3
(f) average plan earnings (prior year)	83,600	85,800
Deferred Vested Participants		
(a) count	-	-
Pensioners (including beneficiaries)		
(a) count	1,705	1,795
(b) average age	67.4	67.5
(c) average annual benefit	22,020	22,226
Duration of plan liabilities	13.0	12.9

<b>Plan Assets (numbers in \$000's) *</b>		
Change in Plan Assets during Prior Year		
(a) Market Value of Assets at January 1 of prior year	624,431	668,828
(b) Employer Contributions during prior year	34,860	35,630
(c) Benefit Payments during prior year	(34,800)	(37,540)
(d) Expenses during prior year	-	-
(e) Investment return during prior year	44,337	29,921
(f) Market Value of Assets at January 1 of current year	668,828	696,839
(g) Rate of return during prior year	7.10%	4.48%
Average Portfolio Mix During Prior Year		
(a) Domestic Large Cap Equities	30%	25%
(b) Domestic Small Cap Equities	15%	15%
(c) Domestic Fixed Income	35%	40%
(d) International Equities	10%	10%
(e) Real Estate	5%	6%
(f) Cash	5%	4%
(g) Total	100%	100%
Duration of Domestic Fixed Income	9.0	9.0
Asset Class Returns during Prior Year		
(a) Domestic Large Cap Equities	11%	4%
(b) Domestic Small Cap Equities	14%	2%
(c) Domestic Fixed Income	4%	6%
(d) International Equities	5%	3%
(e) Real Estate	-5%	8%
(f) Cash	1%	0%

\* numbers may not add due to rounding

**National Oil Pension Plan**  
**Historical Actuarial Valuation Results**

**2020**

**2021**

**Expense Valuation – January 1 (numbers in \$000's) \***

1. Funded Status and Deferred Costs		
(a) Defined Benefit Obligation (DBO)		
(i) Vested	(1,092,176)	(1,112,326)
(ii) Non-vested	(57,483)	(52,413)
(iii) Total	(1,149,659)	(1,164,740)
(b) Fair Value of Assets	668,828	696,839
(c) Funded Status: (a)(iii) + (b)	(480,831)	(467,901)
2. Defined Benefit Cost Recognized in Profit or Loss		
(a) Service Cost (beginning of year)	58,986	59,347
(b) Interest Cost (net)	19,575	19,100
(c) Defined Benefit Cost Recognized in Profit or Loss	78,562	78,447
[All plan administrative expenses are paid and accounted for outside of the plan fund]		
3. Actuarial Basis and Supplemental Data		
(a) Discount rate	3.75%	3.75%
(b) Return on assets	6.25%	6.25%
(c) Mortality	CPM-2014	CPM-2014
(d) Salary scale	3.00%	3.00%
(e) Inflation	2.75%	2.75%
(f) Turnover	NOC experience during period 2000-05	
(g) Proportion married and age difference	80% married; male spouses 3 years older than female spouses	
(h) Retirement age	Age 62	
(i) Expenses	Assume all expenses paid by company	
(j) Asset valuation method	Market value	
(k) Actuarial cost method	Projected Unit Credit	
(l) Expected employer contributions	35,631	35,849
(m) Expected benefit payments	(37,540)	(39,900)

\* numbers may not add due to rounding

## National Oil Retiree Health Benefit Program

### Key Plan Provisions

Eligibility	Immediate
Earliest Retirement Age	55 with 10 years of service
Retirement benefit	Retirees and their spouses may elect to participate in a self-insured health plan with 100% of the plan cost paid by the employer
Pre-retirement / termination benefits	None
Spousal coverage	Coverage continues for the life of the spouse after death of an eligible retiree
Cost sharing	\$0 deductible \$0 copay No coinsurance No lifetime maximum
Benefits covered	Office visits Hospital visits Surgery Prescription drugs
Life Insurance benefit	\$50,000 payable upon death after retirement



## National Oil Retiree Health Benefit Program

### Historical Valuation Results

	2020	2021
<b>Expense Valuation Results – January 1 (numbers in \$000's) *</b>		
1. Funded Status and Deferred Costs		
(a) Defined Benefit Obligation		
(i) actives - fully vested	(521,271)	(519,960)
(ii) actives - not fully vested	(223,402)	(233,605)
(iii) retirees	(753,026)	(847,254)
(iv) total	(1,497,698)	(1,600,820)
(b) Fair Value of Assets	-	-
(c) Funded Status: (a)(iv) + (b)	(1,497,698)	(1,600,820)
2. Defined Benefit Cost Recognized in Profit or Loss		
(a) Service cost (beginning of year)	68,319	69,775
(b) Interest cost	58,304	62,176
(c) Defined Benefit Cost Recognized in Profit or Loss	126,622	131,951
[All plan administrative and claims expenses are included in the claims costs used to determine the plan liability]		
3. Expected benefit payments	(22,494)	(25,137)
4. Duration of plan liabilities	17.4	17.5
5. Actuarial Assumptions and Supplemental Information		
(a) Discount rate	3.75%	3.75%
(b) Return on assets	N/A	N/A
(c) Medical trend		
– Initial rate	5.25%	5.00%
– Annual decrease	0.25%	0.25%
– Ultimate rate	4.50%	4.50%
– Year ultimate trend rate reached	2023	2023
(d) CPI	2.75%	2.75%
(e) Per capita claims cost ( <i>not in \$000's</i> )	15,800	16,600
(f) Retirement assumption	Age 62 with 10 years of service	
(g) All other demographic assumptions	Same as those used for Pension Plan	

\* numbers may not add due to rounding