



# Case Study

**SPRING/FALL 2020**

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 9,000 full-time salaried and union hourly employees and up to a further 7,000 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. Full-Time 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 Full-Time 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<br><br>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<br><br>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 Full-Time Pension Plan**  
Demographic Summary as of January 1, 2020

|                        |                 | <b>Service (Years)</b> |             |              |              |               | <b>Totals</b> |        |
|------------------------|-----------------|------------------------|-------------|--------------|--------------|---------------|---------------|--------|
|                        |                 | <b>&lt; 5</b>          | <b>5-10</b> | <b>10-15</b> | <b>15-20</b> | <b>&gt;20</b> |               |        |
| <b>Age<br/>(Years)</b> | < 25            | # Participants         | 50          | 10           | -            | -             | -             | 60     |
|                        |                 | Average Salary         | 43,000      | 54,000       | -            | -             | -             | 44,800 |
|                        | 25-35           | # Participants         | 390         | 100          | 20           | -             | -             | 510    |
|                        |                 | Average Salary         | 60,000      | 72,000       | 74,000       | -             | -             | 62,900 |
|                        | 35-45           | # Participants         | 290         | 180          | 130          | 100           | 10            | 710    |
|                        |                 | Average Salary         | 72,000      | 85,000       | 89,000       | 95,000        | 83,000        | 81,800 |
|                        | 45-55           | # Participants         | 200         | 140          | 140          | 200           | 200           | 880    |
|                        |                 | Average Salary         | 71,000      | 83,000       | 91,000       | 99,000        | 107,000       | 90,600 |
|                        | 55-65           | # Participants         | 120         | 100          | 100          | 150           | 270           | 740    |
|                        |                 | Average Salary         | 69,000      | 80,000       | 86,000       | 96,000        | 107,000       | 92,100 |
|                        | > 65            | # Participants         | 20          | 30           | 20           | 30            | 50            | 150    |
|                        |                 | Average Salary         | 66,000      | 80,000       | 91,000       | 100,000       | 115,000       | 95,300 |
|                        | <b>Totals</b>   | # Participants         | 1,070       | 560          | 410          | 480           | 530           | 3,050  |
|                        |                 | Average Salary         | 65,600      | 80,500       | 88,300       | 97,300        | 107,300       | 83,600 |
|                        | Average Age     |                        | 47.2        |              |              |               |               |        |
|                        | Average Service |                        | 10.9        |              |              |               |               |        |
|                        | Average Salary  |                        | 83,600      |              |              |               |               |        |

|   | <b>Reconciliation of Plan Participants</b> |                                      | <b>Total</b> |
|---|--|--------------------------------------|--------------|
|   | <b>Actives</b>                             | <b>Pensioners/<br/>Beneficiaries</b> |              |
| <i>Participants as of January 1, 2019</i> | <b>3,030</b>                               | <b>1,595</b>                         | <b>4,625</b> |
| - New Entrants/Rehires                    | 300  | -                                    | 300          |
| - Terminated Nonvested                    | (90)                                       | -                                    | (90)         |
| - Terminated Vested (Lump Sum Cashout)    | (60)                                       | -                                    | (60)         |
| - Retirement                              | (125)                                      | 125                                  | -            |
| - Death w/ Beneficiary                    | (3)  | (10)                                 | (13)         |
| - Death w/o Beneficiary                   | (2)  | (5)                                  | (7)          |
| - Net change                              | 20   | 110                                  | 130          |
| <i>Participants as of January 1, 2020</i> | <b>3,050</b>                               | <b>1,705</b>                         | <b>4,755</b> |

**National Oil Full-Time Pension Plan**  
Historical Actuarial Valuation Results

2019

2020

**Participant Summary – January 1**

|  |        |        |
|--|--------|--------|
| Active Participants  |        |        |
| (a) Count  | 3,030  | 3,050  |
| (b) average age  | 47.1   | 47.2   |
| (c) average service  | 10.8   | 10.9   |
| (d) average future working lifetime                            | 11.9   | 11.8   |
| (e) average future working lifetime to vesting (for those not) | 2.5    | 2.5    |
| (f) average plan earnings (prior year)                         | 82,600 | 83,600 |
| Deferred Vested Participants                                   |        |        |
| (a) count  | -      | -      |
| Pensioners (including beneficiaries)                           |        |        |
| (a) count  | 1,595  | 1,705  |
| (b) average age  | 67.5   | 67.4   |
| (c) average annual benefit                                     | 21,816 | 22,020 |
| Duration of plan liabilities                                   | 13.1   | 13.0   |

**Plan Assets (numbers in \$000's) \***

|   |          |          |
|---|----------|----------|
| Change in Plan Assets during Prior Year                 |          |          |
| (a) Market Value of Assets at January 1 of prior year   | 590,439  | 624,431  |
| (b) Employer Contributions during prior year            | 33,590   | 34,860   |
| (c) Benefit Payments during prior year                  | (32,400) | (34,800) |
| (d) Expenses during prior year                          | -        | -        |
| (e) Investment return during prior year                 | 32,802   | 44,337   |
| (f) Market Value of Assets at January 1 of current year | 624,431  | 668,828  |
| (g) Rate of return during prior year                    | 5.55%    | 7.10%    |
| Average Portfolio Mix During Prior Year                 |          |          |
| (a) Domestic Large Cap Equities                         | 30%      | 30%      |
| (b) Domestic Small Cap Equities                         | 20%      | 15%      |
| (c) Domestic Fixed Income                               | 35%      | 35%      |
| (d) International Equities                              | 5%       | 10%      |
| (e) Real Estate   | 5%       | 5%       |
| (f) Cash  | 5%       | 5%       |
| (g) Total   | 100%     | 100%     |
| Duration of Domestic Fixed Income                       | 10.0     | 9.0      |
| Asset Class Returns during Prior Year                   |          |          |
| (a) Domestic Large Cap Equities                         | 7%       | 11%      |
| (b) Domestic Small Cap Equities                         | 6%       | 14%      |
| (c) Domestic Fixed Income                               | 5%       | 4%       |
| (d) International Equities                              | 2%       | 5%       |
| (e) Real Estate   | 7%       | -5%      |
| (f) Cash  | 1%       | 1%       |

\* numbers may not add due to rounding

**National Oil Full-Time Pension Plan**  
Historical Actuarial Valuation Results

2019

2020

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

|  |   |             |
|--|---|-------------|
| 1. Funded Status and Deferred Costs  |   |             |
| (a) Defined Benefit Obligation (DBO)   |   |             |
| (i) Vested   | (1,023,270)   | (1,092,176) |
| (ii) Non-vested  | (53,856)  | (57,483)    |
| (iii) Total  | (1,077,127)   | (1,149,659) |
| (b) Fair Value of Assets   | 624,431   | 668,828     |
| (c) Funded Status: (a)(iii) + (b)  | (452,695)   | (480,831)   |
| 2. Defined Benefit Cost Recognized in Profit or Loss                                   |   |             |
| (a) Service Cost (beg. of year)  | 57,706  | 58,986      |
| (b) Interest Cost (net)  | 18,486  | 19,575      |
| (c) Defined Benefit Cost Recognized in Profit or Loss                                  | 76,193  | 78,562      |
| [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   | 3.25%   | 3.00%       |
| (e) Inflation  | 3.00%   | 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  | 34,858  | 35,631      |
| (m) Expected benefit payments  | (34,800)  | (37,540)    |

\* 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<br>\$0 copay<br>No coinsurance<br>No lifetime maximum  |
| Benefits covered                      | Office visits<br>Hospital visits<br>Surgery<br>Prescription drugs   |
| Life Insurance benefit                | \$50,000 payable upon death after retirement  |



## National Oil Retiree Health Benefit Program

### Historical Valuation Results

2019

2020

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

##### 1. Funded Status and Deferred Costs

|                                  |             |             |
|----------------------------------|-------------|-------------|
| (a) Defined Benefit Obligation   |             |             |
| (i) actives - fully vested       | (475,546)   | (516,407)   |
| (ii) actives - not fully vested  | (203,806)   | (221,317)   |
| (iii) retirees                   | (649,766)   | (753,026)   |
| (iv) total                       | (1,329,118) | (1,490,750) |
| (b) Fair Value of Assets         | -           | -           |
| (c) Funded Status: (a)(iv) + (b) | (1,329,118) | (1,490,750) |

##### 2. Defined Benefit Cost Recognized in Profit or Loss

|   |         |         |
|---|---------|---------|
| (a) Service cost (beg. of year)                       | 62,903  | 67,681  |
| (b) Interest cost                                     | 51,834  | 58,019  |
| (c) Defined Benefit Cost Recognized in Profit or Loss | 114,737 | 125,701 |

[All plan administrative and claims expenses are included in the claims costs used to determine the plan liability.]

##### 3. Expected benefit payments

(19,584) (22,494)

##### 4. Duration of plan liabilities

17.4 17.4

##### 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                                       | 5.50%                                | 5.25%  |
| – Annual decrease                                    | 0.25%                                | 0.25%  |
| – Ultimate rate                                      | 4.50%                                | 4.50%  |
| – Year ultimate trend rate reached                   | 2023                                 | 2023   |
| (d) CPI  | 3.00%                                | 2.75%  |
| (e) Per capita claims cost ( <i>not in \$000's</i> ) | 14,800                               | 15,800 |
| (f) Retirement assumption                            | Age 62 with 10 years of service      |        |
| (g) All other demographic assumptions                | Same as those used for pension plans |        |

\* numbers may not add due to rounding