

**SPRING 2014**

**EXAM RETFRC**

**Retirement Funding &  
Regulation Exam – Canada**

**CASE STUDY**

**RETFRC afternoon**



## **Case Study - Course FR Retirement - Canada**

### **National Oil Company - Background**

National Oil Company (NOC) is a large well-established company that services oil wells all over Canada. Most of NOC's employees are employed in the province of Ontario. NOC has been in existence for over 30 years and has more than 10,000 full-time salaried and union hourly employees and over 6,000 part-time employees. 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 in 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 Canada. Although NOC is the largest player in the industry within Canada, 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.

Canadian legislation and social programs will apply to NOC in this case study.

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

NOC maintains four retirement programs:

1. a final-average pay defined benefit (DB) RPP for its full-time salaried employees;
2. a flat dollar DB RPP for its full-time hourly union staff;
3. a defined contribution (DC) RPP for its part-time workforce; and
4. a non-registered pension plan (referred to as the SERP) for its executives that is supplemental to the salaried RPP. This plan has no assets.

## Extracts of Retirement Benefits Provisions and Financial Information

### National Oil Full-Time Salaried Pension Plan

|                              |   |
|------------------------------|---|
| Eligibility                  | Immediate   |
| Vesting                      | Immediate, effective July 1, 2012   |
| Normal Retirement Age        | 65  |
| Early Retirement Age         | 55  |
| Best Average Earnings        | Average annual earnings during 60 consecutive months in which earnings were highest   |
| Earnings                     | Base pay, excluding overtime and bonuses  |
| Normal Retirement Benefit    | 2% of best average earnings times years of service, subject to legislative maximum  |
| Accrued Benefit              | Benefit calculated as under the normal retirement benefit formula using best average earnings and service as of date of calculation                           |
| Early Retirement Benefit     | Accrued benefit reduced by 0.25% per month that early retirement precedes age 62 for active participants and actuarial equivalent for terminated participants |
| Form of Benefit              | If with spouse, 60% joint & survivor benefit, without reduction. If without spouse, single life annuity   |
| Optional Forms of Benefit    | None  |
| Indexing                     | None  |
| Termination Benefit          | (1) Lump sum value equal to actuarial present value of accrued pension payable at age 65; or (2) Deferred pension   |
| Pre-Retirement Death Benefit | Lump sum value equal to actuarial present value of accrued pension payable at age 65 to named beneficiary   |
| Disability Benefit           | Accrual of service while on long term disability and immediate pension without a reduction upon permanent and total disability                                |

**National Oil Full-Time Salaried Pension Plan  
Reconciliation of Plan Participants (2010 - 2013)**

|  | <u>Active</u> | <u>Pensioners/<br/>Beneficiaries</u> | <u>Total</u> |
|--|---------------|--------------------------------------|--------------|
| <b>1. Participants as of January 1, 2010</b> | <b>4,251</b>  | <b>720</b>                           | <b>4,971</b> |
| - New Entrants/Rehires                       | 100           | -                                    | 100          |
| - Terminated Nonvested                       | (100)         | -                                    | (100)        |
| - Terminated Vested (Lump Sum Cashout)       | (120)         | -                                    | (120)        |
| - Retirement                                 | (50)          | 50                                   | -            |
| - Death w/ Beneficiary                       | (5)           | 5                                    | -            |
| - Death w/o Beneficiary                      | -             | (2)                                  | (2)          |
| - Net change                                 | (175)         | 53                                   | (122)        |
| <b>2. Participants as of January 1, 2011</b> | <b>4,076</b>  | <b>773</b>                           | <b>4,849</b> |
| - New Entrants/Rehires                       | 250           | -                                    | 250          |
| - Terminated Nonvested                       | (100)         | -                                    | (100)        |
| - Terminated Vested (Lump Sum Cashout)       | (130)         | -                                    | (130)        |
| - Retirement                                 | (45)          | 45                                   | -            |
| - Death w/ Beneficiary                       | (5)           | 5                                    | -            |
| - Death w/o Beneficiary                      | -             | (2)                                  | (2)          |
| - Net change                                 | (30)          | 48                                   | 18           |
| <b>3. Participants as of January 1, 2012</b> | <b>4,046</b>  | <b>821</b>                           | <b>4,867</b> |
| - New Entrants/Rehires                       | 200           | -                                    | 200          |
| - Terminated Nonvested                       | (80)          | -                                    | (80)         |
| - Terminated Vested (Lump Sum Cashout)       | (90)          | -                                    | (90)         |
| - Retirement                                 | (40)          | 40                                   | -            |
| - Death w/ Beneficiary                       | (4)           | 4                                    | -            |
| - Death w/o Beneficiary                      | -             | (14)                                 | (14)         |
| - Net change                                 | (14)          | 30                                   | 16           |
| <b>4. Participants as of January 1, 2013</b> | <b>4,032</b>  | <b>851</b>                           | <b>4,883</b> |

**National Oil Full-Time Salaried Pension Plan**  
**Age/Svc/Earnings as of January 1, 2013**

|                        |        | <b>Service (Years)</b> |        |        |        |        |        |        |
|------------------------|--------|------------------------|--------|--------|--------|--------|--------|--------|
|                        |        | < 5                    | 5-10   | 10-15  | 15-20  | >20    | Totals |        |
| <b>Age<br/>(Years)</b> | < 25   | # Participants         | 190    | 90     | -      | -      | -      | 280    |
|                        |        | Average Salary         | 36,600 | 47,800 | -      | -      | -      | 40,200 |
|                        | 25-35  | # Participants         | 250    | 130    | 85     | 20     | -      | 485    |
|                        |        | Average Salary         | 48,400 | 58,900 | 66,500 | 70,500 | -      | 55,300 |
|                        | 35-45  | # Participants         | 190    | 200    | 180    | 180    | 100    | 850    |
|                        |        | Average Salary         | 61,000 | 68,300 | 74,200 | 80,600 | 82,100 | 72,100 |
|                        | 45-55  | # Participants         | 180    | 160    | 175    | 310    | 650    | 1,475  |
|                        |        | Average Salary         | 64,500 | 66,900 | 75,000 | 78,000 | 79,800 | 75,600 |
|                        | 55-65  | # Participants         | 170    | 100    | 90     | 100    | 450    | 910    |
|                        |        | Average Salary         | 64,200 | 67,500 | 72,000 | 78,200 | 78,500 | 73,900 |
|                        | > 65   | # Participants         | 3      | 10     | 5      | 4      | 10     | 32     |
|                        |        | Average Salary         | 58,200 | 65,000 | 67,000 | 70,000 | 78,000 | 69,400 |
|                        | Totals | # Participants         | 983    | 690    | 535    | 614    | 1,210  | 4,032  |
|                        |        | Average Salary         | 54,300 | 63,400 | 72,800 | 78,500 | 79,500 | 69,500 |
|                        |        | Avg Age                | 46.0   |        |        |        |        |        |
|                        |        | Avg Svc                | 14.7   |        |        |        |        |        |
|                        |        | Avg Salary             | 69,500 |        |        |        |        |        |

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

2010 2011 2012 2013

**Participant Summary - January 1**

|  |        |        |        |        |
|--|--------|--------|--------|--------|
| <i>Active Participants</i>             |        |        |        |        |
| (a) count                              | 4,251  | 4,076  | 4,046  | 4,032  |
| (b) average age                        | 45.4   | 45.2   | 45.1   | 46.0   |
| (c) average service                    | 15.3   | 15.4   | 15.0   | 14.7   |
| (d) average future working lifetime    | 11.0   | 11.0   | 11.0   | 11.0   |
| (e) average plan earnings (prior year) | 66,300 | 67,400 | 68,000 | 69,500 |
| <i>Deferred Vested Participants</i>    |        |        |        |        |
| (a) count                              | -      | -      | -      | -      |
| <i>Pensioners (incl beneficiaries)</i> |        |        |        |        |
| (a) count                              | 720    | 773    | 821    | 851    |
| (b) average age                        | 68.2   | 68.0   | 67.0   | 67.7   |
| (c) average annual benefit             | 21,800 | 22,000 | 22,500 | 22,800 |

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

|   |          |          |          |          |
|---|----------|----------|----------|----------|
| <i>Change in Plan Assets during Prior Year:</i>     |          |          |          |          |
| Market Value of Assets at January 1 of prior year   | 602,863  | 633,966  | 748,481  | 832,957  |
| Employer Contributions during prior year            | 92,000   | 92,000   | 99,000   | 100,000  |
| Benefit Payments during prior year                  | (21,000) | (21,000) | (22,000) | (22,200) |
| Expenses during prior year                          | -        | -        | -        | -        |
| Investment return during prior year                 | (39,898) | 43,515   | 7,476    | 58,240   |
| Market Value of Assets at January 1 of current year | 633,966  | 748,481  | 832,957  | 968,997  |
| Rate of return during prior year                    | -6%      | 6.5%     | 1.0%     | 6.7%     |
| <i>Average Portfolio Mix During Prior Year:</i>     |          |          |          |          |
| (a) Domestic Large Cap Equities                     | 32%      | 30%      | 30%      | 32%      |
| (b) Domestic Small Cap Equities                     | 25%      | 10%      | 10%      | 8%       |
| (c) Domestic Fixed Income                           | 23%      | 35%      | 40%      | 40%      |
| (d) International Equities                          | 15%      | 20%      | 15%      | 16%      |
| (e) Real Estate                                     | 3%       | 0%       | 0%       | 0%       |
| (f) Cash  | 2%       | 5%       | 5%       | 4%       |
| (g) Total   | 100%     | 100%     | 100%     | 100%     |
| <i>Asset Class Returns during Prior Year:</i>       |          |          |          |          |
| (a) Domestic Large Cap Equities                     | -12%     | 12%      | -9%      | 7%       |
| (b) Domestic Small Cap Equities                     | -5%      | 5%       | -5%      | 7%       |
| (c) Domestic Fixed Income                           | 1%       | 1%       | 14%      | 4%       |
| (d) International Equities                          | -10%     | 10%      | -10%     | 14%      |
| (e) Real Estate                                     | 3%       | 3%       | 3%       | 8%       |
| (f) Cash  | 1%       | 1%       | 1%       | 1%       |

\* numbers may not add due to rounding

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

|   | 2010  | 2011  | 2012  | 2013  | 2013<br>Interest Rate<br>Sensitivity              |
|---|---|---|---|---|---|
| <b>Going Concern Valuation - January 1 (numbers in \$000's) *</b> |   |   |   |   |   |
| <b>1. Actuarial Accrued Liability:</b>                            |   |   |   |   |   |
| (a) Active participants   | 692,620   | 776,554   | 756,002   | 915,409   | 1,293,137   |
| (b) Deferred vested participants                                  | -   | -   | -   | -   | -   |
| (c) Pensioners  | 185,213   | 210,874   | 229,059   | 252,236   | 279,400   |
| (d) Total   | 877,833   | 987,429   | 985,061   | 1,167,645   | 1,572,537   |
| <b>2. Actuarial Value of Assets</b>                               | 633,966   | 748,481   | 832,957   | 968,997   | 968,997   |
| <b>3. Unfunded Actuarial Accrued Liability: (1d)-(2)</b>          | 243,867   | 238,948   | 152,104   | 198,648   | 603,540   |
| <b>4. Normal Cost (beg. Of year)</b>                              | 45,269  | 50,426  | 50,400  | 62,273  | 87,969  |
| <b>5. Change in Unfunded AAL during prior year:</b>               |   |   |   |   |   |
| (a) Unfunded AAL at prior valuation date                          | 309,436   | 243,867   | 238,948   | 152,104   |   |
| (b) Adjustment for Interest                                       | 20,113  | 15,851  | 14,337  | 9,126   |   |
| (c) Normal Cost w/interest less contributions                     | (43,202)  | (46,778)  | (48,519)  | (49,576)  |   |
| (d) (Gain)/Loss on investment                                     | 81,391  | -   | 39,743  | (5,929)   |   |
| (e) (Gain)/Loss on termination                                    | (17,000)  | (20,000)  | (25,000)  | 5,000   |   |
| (f) (Gain)/Loss on salary increases less than expected            | (100,000)   | (25,000)  | (30,000)  | (14,000)  |   |
| (g) (Gain)/Loss on mortality                                      | (6,900)   | 2,000   | 2,000   | (3,000)   |   |
| (h) (Gain)/Loss on retirement                                     | 25,000  | 23,000  | (5,000)   | 4,000   |   |
| (i) (Gain)/Loss on assumption changes                             | 20,000  | 40,000  | -   | 104,000   |   |
| (j) (Gain)/Loss on expenses                                       | -   | -   | -   | -   |   |
| (k) (Gain)/Loss on all other factors                              | (44,972)  | 6,007   | (34,404)  | (3,078)   |   |
| (l) Unfunded AAL at current valuation date                        | 243,867   | 238,948   | 152,104   | 198,648   |   |
| <b>6. Actuarial Basis</b>   |   |   |   |   |   |
| (a) Interest  | 6.50%   | 6.00%   | 6.00%   | 5.50%   | 4.50%   |
| (b) Salary scale  | 4.00%   | 4.00%   | 4.00%   | 4.00%   | 4.00%   |
| (c) Consumer Price Index  | 2.50%   | 2.50%   | 2.50%   | 2.50%   | 2.50%   |
|   | 1994 Uninsured Pensioner Mortality - Generational | 1994 Uninsured Pensioner Mortality - Generational | 1994 Uninsured Pensioner Mortality - Generational | 1994 Uninsured Pensioner Mortality - Generational | 1994 Uninsured Pensioner Mortality - Generational |
| (d) Mortality   |   |   |   |   |   |
| (e) Turnover  | Based on NOC experience for 1996-2006             |   |   |   |   |
| (f) Retirement age  | Age 62  |   |   |   |   |
| (g) Proportion married and age difference                         | 80% married, husbands 3 years older than wives    |   |   |   |   |
| (h) Expenses  | Assume all expenses paid by company               |   |   |   |   |
| (i) Asset Valuation Method  | Market value of assets                            |   |   |   |   |
| (j) Actuarial Cost Method   | Projected unit credit                             |   |   |   |   |

\* numbers may not add due to rounding



**National Oil Full-Time Salaried Pension Plan**  
**Solvency Valuation Results**

|  | 2011                                | 2012                                 | 2013                                 | 2013<br>Interest Rate<br>Sensitivity |
|--|-------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|
| <b>Solvency Valuation - January 1 (numbers in \$000's) *</b> |                                     |                                      |                                      |                                      |
| <b>1. Actuarial Accrued Liability:</b>                       |                                     |                                      |                                      |                                      |
| (a) Active participants                                      | 725,185                             | 850,249                              | 941,068                              | 1,066,210                            |
| (b) Deferred vested participants                             |                                     |                                      |                                      |                                      |
| (c) Pensioners   | 239,785                             | 288,171                              | 316,266                              | 351,191                              |
| (d) Total  | 964,970                             | 1,138,420                            | 1,257,334                            | 1,417,401                            |
| <b>2. Market Value of Assets</b>                             | 748,481                             | 832,957                              | 968,997                              | 968,997                              |
| <b>3. Solvency Deficiency: (1d)-(2)</b>                      | 216,489                             | 305,463                              | 288,337                              | 448,404                              |
| <b>4. Actuarial Basis</b>                                    |                                     |                                      |                                      |                                      |
| (a) Interest - Benefit paid by lump sum                      | 3.7% for 10 years<br>5% thereafter  | 2.4% for 10 years<br>3.9% thereafter | 2.5% for 10 years<br>3.7% thereafter | 1.5% for 10 years<br>2.7% thereafter |
| (a) Interest - Benefit settled by annuity purchase           | 4.5%                                | 3.3%                                 | 3.0%                                 | 2.0%                                 |
| (b) Mortality  | UP 1994 AA20                        | UP 1994 -<br>Generational            | UP 1994 -<br>Generational            | UP 1994 -<br>Generational            |
| (c) Retirement age   | The age that produces the largest   |                                      |                                      |                                      |
| (d) Proportion married and age difference                    | 80% with spouse, Male spouses are 3 |                                      |                                      |                                      |
| (e) Asset Valuation Method                                   | Market value of assets              |                                      |                                      |                                      |
| (f) Actuarial Cost Method                                    | Unit Credit                         |                                      |                                      |                                      |

\* numbers may not add due to rounding

National Oil Full-Time Hourly Union Pension Plan

|                              |  |
|------------------------------|--|
| Eligibility                  | Immediate  |
| Vesting                      | Immediate, effective July 1, 2012  |
| Normal Retirement Age        | 65   |
| Early Retirement Age         | 55   |
| Normal Retirement Benefit    | \$80 per month times all years of service for terminations/retirements after 2004  |
| Accrued Benefit              | Benefit calculated as under the normal retirement benefit formula based on service and multiplier as of date of calculation  |
| Early Retirement Benefit     | Unreduced benefit at 62 with 30 years of service, otherwise reduced by 0.25% per month that early retirement precedes Normal Retirement Age for active participants and actuarial equivalent for terminated participants |
| Form of Benefit              | With a spouse, 60% joint & survivor benefit without reduction<br>Without a spouse, single life annuity.  |
| Optional Forms of Benefit    | None   |
| Post-Retirement Indexing     | Lesser of 1% or CPI each year after pension commencement   |
| Termination Benefit          | (1) Lump sum value equal to actuarial present value of accrued pension payable at age 65; or (2) Deferred pension  |
| Pre-Retirement Death Benefit | Lump sum value equal to actuarial present value of accrued pension payable at age 65 to named beneficiary  |
| Disability Benefit           | None   |

**National Oil Full-Time Hourly Union Pension Plan  
Reconciliation of Plan Participants (2010 - 2013)**

|  | <u>Active</u> | <u>Pensioners/<br/>Beneficiaries</u> | <u>Total</u> |
|--|---------------|--------------------------------------|--------------|
| <b>1. Participants as of January 1, 2010</b> | <b>6,395</b>  | <b>1,120</b>                         | <b>7,515</b> |
| - New Entrants/Rehires                       | 50            | -                                    | 50           |
| - Terminated Nonvested                       | (50)          | -                                    | (50)         |
| - Terminated Vested (Lump Sum Cashout)       | (120)         | -                                    | (120)        |
| - Retirement                                 | (50)          | 50                                   | -            |
| - Death w/ Beneficiary                       | -             | -                                    | -            |
| - Death w/o Beneficiary                      | -             | (35)                                 | (35)         |
| - Net change                                 | (170)         | 15                                   | (155)        |
| <b>2. Participants as of January 1, 2011</b> | <b>6,225</b>  | <b>1,135</b>                         | <b>7,360</b> |
| - New Entrants/Rehires                       | 300           | -                                    | 300          |
| - Terminated Nonvested                       | (50)          | -                                    | (50)         |
| - Terminated Vested (Lump Sum Cashout)       | (130)         | -                                    | (130)        |
| - Retirement                                 | (60)          | 50                                   | (10)         |
| - Death w/ Beneficiary                       | -             | -                                    | -            |
| - Death w/o Beneficiary                      | -             | (35)                                 | (35)         |
| - Net change                                 | 60            | 15                                   | 75           |
| <b>3. Participants as of January 1, 2012</b> | <b>6,285</b>  | <b>1,150</b>                         | <b>7,435</b> |
| - New Entrants/Rehires                       | 250           | -                                    | 250          |
| - Terminated Nonvested                       | (40)          | -                                    | (40)         |
| - Terminated Vested (Lump Sum Cashout)       | (120)         | -                                    | (120)        |
| - Retirement                                 | (70)          | 70                                   | -            |
| - Death w/ Beneficiary                       | (5)           | 5                                    | -            |
| - Death w/o Beneficiary                      | -             | (35)                                 | (35)         |
| - Net change                                 | 15            | 40                                   | 55           |
| <b>4. Participants as of January 1, 2013</b> | <b>6,300</b>  | <b>1,190</b>                         | <b>7,490</b> |

**National Oil Full-Time Hourly Union Pension Plan**  
**Age/Svc/Earnings as of January 1, 2013**

|                        |        | <b>Service (Years)</b> |        |        |        |        |        |        |
|------------------------|--------|------------------------|--------|--------|--------|--------|--------|--------|
|                        |        | < 5                    | 5-10   | 10-15  | 15-20  | >20    | Totals |        |
| <b>Age<br/>(Years)</b> | < 25   | # Participants         | 240    | 80     | -      | -      | -      | 320    |
|                        |        | Average Salary         | 41,700 | 47,000 | -      | -      | -      | 43,000 |
|                        | 25-35  | # Participants         | 340    | 100    | 90     | 10     | -      | 540    |
|                        |        | Average Salary         | 46,100 | 48,000 | 52,900 | 55,200 | -      | 47,800 |
|                        | 35-45  | # Participants         | 290    | 310    | 330    | 620    | 420    | 1,970  |
|                        |        | Average Salary         | 52,100 | 48,900 | 56,100 | 58,300 | 58,800 | 55,600 |
|                        | 45-55  | # Participants         | 150    | 210    | 320    | 650    | 870    | 2,200  |
|                        |        | Average Salary         | 52,000 | 51,800 | 58,800 | 59,000 | 60,200 | 58,300 |
|                        | 55-65  | # Participants         | 75     | 85     | 110    | 200    | 730    | 1,200  |
|                        |        | Average Salary         | 51,500 | 53,100 | 60,800 | 61,600 | 64,100 | 61,800 |
|                        | > 65   | # Participants         | 10     | 15     | 25     | 15     | 5      | 70     |
|                        |        | Average Salary         | 52,900 | 54,800 | 62,800 | 63,700 | 65,000 | 60,000 |
|                        | Totals | # Participants         | 1,105  | 800    | 875    | 1,495  | 2,025  | 6,300  |
|                        |        | Average Salary         | 47,900 | 49,900 | 57,500 | 59,100 | 61,300 | 56,500 |
|                        |        | Avg Age                | 46.3   |        |        |        |        |        |
|                        |        | Avg Svc                | 16.6   |        |        |        |        |        |
|                        |        | Avg Salary             | 56,500 |        |        |        |        |        |

**National Oil Full-Time Hourly Union Pension Plan**  
**Historical Going Concern Actuarial Valuation Results**

**2010                      2011                      2012                      2013**

**Participant Summary - January 1**

|  |        |        |        |        |
|--|--------|--------|--------|--------|
| <i>Active Participants</i>             |        |        |        |        |
| (a) count                              | 6,395  | 6,225  | 6,285  | 6,300  |
| (b) average age                        | 46.1   | 46.1   | 45.8   | 46.3   |
| (c) average service                    | 17.3   | 17.3   | 16.8   | 16.6   |
| (d) average future working lifetime    | 10.8   | 10.8   | 11.0   | 10.7   |
| (e) average plan earnings (prior year) | 51,000 | 53,100 | 54,300 | 56,500 |
| <i>Deferred Vested Participants</i>    |        |        |        |        |
| (a) count                              | -      | -      | -      | -      |
| <i>Pensioners (incl beneficiaries)</i> |        |        |        |        |
| (a) count                              | 1,120  | 1,135  | 1,150  | 1,190  |
| (b) average age                        | 68.0   | 68.0   | 67.0   | 67.8   |
| (c) average annual benefit             | 13,400 | 13,400 | 13,600 | 14,200 |

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

|   |          |          |          |          |
|---|----------|----------|----------|----------|
| <i>Change in Plan Assets during Prior Year:</i>     |          |          |          |          |
| Market Value of Assets at January 1 of prior year   | 432,988  | 488,942  | 606,421  | 693,567  |
| Employer Contributions during prior year            | 100,000  | 100,000  | 100,000  | 95,000   |
| Benefit Payments during prior year                  | (17,000) | (17,000) | (19,000) | (19,500) |
| Expenses during prior year                          | -        | -        | -        | -        |
| Investment return during prior year                 | (27,046) | 34,479   | 6,146    | 48,852   |
| Market Value of Assets at January 1 of current year | 488,942  | 606,421  | 693,567  | 817,919  |
| Rate of return during prior year                    | -6%      | 6.5%     | 1.0%     | 6.7%     |
| <i>Average Portfolio Mix During Prior Year:</i>     |          |          |          |          |
| (a) Domestic Large Cap Equities                     | 30%      | 30%      | 30%      | 32%      |
| (b) Domestic Small Cap Equities                     | 10%      | 10%      | 10%      | 8%       |
| (c) Domestic Fixed Income                           | 35%      | 35%      | 40%      | 40%      |
| (d) International Equities                          | 20%      | 20%      | 15%      | 16%      |
| (e) Real Estate                                     | 0%       | 0%       | 0%       | 0%       |
| (f) Cash  | 5%       | 5%       | 5%       | 4%       |
| (g) Total   | 100%     | 100%     | 100%     | 100%     |
| <i>Asset Class Returns during Prior Year:</i>       |          |          |          |          |
| (a) Domestic Large Cap Equities                     | -12%     | 12%      | -9%      | 7%       |
| (b) Domestic Small Cap Equities                     | -5%      | 5%       | -5%      | 7%       |
| (c) Domestic Fixed Income                           | 1%       | 1%       | 14%      | 4%       |
| (d) International Equities                          | -10%     | 10%      | -10%     | 14%      |
| (e) Real Estate                                     | 3%       | 3%       | 3%       | 8%       |
| (f) Cash  | 1%       | 1%       | 1%       | 1%       |

\* numbers may not add due to rounding

**National Oil Full-Time Hourly Union Pension Plan**  
**Historical Going Concern Actuarial Valuation Results**

2010 2011 2012 2013

**Going Concern Valuation - January 1 (numbers in \$000's) \***

**2013**  
**Interest Rate**  
**Sensitivity**

|  | 2010  | 2011     | 2012     | 2013     | 2013      |
|--|---|----------|----------|----------|-----------|
| <b>1. Actuarial Accrued Liability:</b>                   |   |          |          |          |           |
| Active Multiplier  | \$ 80   | \$ 80    | \$ 80    | \$ 80    | \$ 80     |
| (a) Active participants                                  | 543,526   | 587,192  | 574,865  | 688,339  | 937,781   |
| (b) Deferred vested participants                         | -   | -        | -        | -        | 0         |
| (c) Pensioners   | 172,592   | 182,508  | 193,936  | 221,364  | 243,331   |
| (d) Total  | 716,118   | 769,700  | 768,801  | 909,703  | 1,181,112 |
| <b>2. Actuarial Value of Assets</b>                      | 488,942   | 606,421  | 693,567  | 817,919  | 817,919   |
| <b>3. Unfunded Actuarial Accrued Liability: (1d)-(2)</b> | 227,176   | 163,279  | 75,235   | 91,784   | 363,193   |
| <b>4. Normal Cost (beg. Of year)</b>                     | 31,418  | 33,942   | 34,218   | 41,466   | 56,493    |
| <b>5. Change in Unfunded AAL during prior year:</b>      |   |          |          |          |           |
| (a) Unfunded AAL at prior valuation date                 | 209,588   | 227,176  | 163,279  | 75,235   |           |
| (b) Adjustment for Interest                              | 13,623  | 14,766   | 9,797    | 4,514    |           |
| (c) Normal Cost w/interest less contributions            | (72,165)  | (69,790) | (67,022) | (61,579) |           |
| (d) (Gain)/Loss on investment                            | 57,888  | -        | 32,670   | (4,973)  |           |
| (e) (Gain)/Loss on termination                           | (8,000)   | 12,000   | 8,000    | 7,000    |           |
| (f) (Gain)/Loss on salary increases less than expected   | -   | -        | -        | -        |           |
| (g) (Gain)/Loss on mortality                             | (3,900)   | (28,000) | (21,000) | (9,000)  |           |
| (h) (Gain)/Loss on retirement                            | (600)   | (26,000) | (26,000) | (6,000)  |           |
| (i) (Gain)/Loss on assumption changes                    | -   | 33,000   | -        | 80,000   |           |
| (j) (Gain)/Loss on expenses                              | -   | -        | -        | -        |           |
| (k) (Gain)/Loss on all other factors                     | 30,742  | 127      | (24,489) | 6,587    |           |
| (l) Change in active benefit multiplier                  | -   | -        | -        | -        |           |
| (m) Unfunded AAL at current valuation date               | 227,176   | 163,279  | 75,235   | 91,784   |           |
| <b>6. Actuarial Basis</b>                                |   |          |          |          |           |
| (a) Interest   | 6.50%   | 6.00%    | 6.00%    | 5.50%    | 4.50%     |
| (b) Salary scale   | N/A   | N/A      | N/A      | N/A      | N/A       |
| (c) Consumer Price Index                                 | 2.50%   | 2.50%    | 2.50%    | 2.50%    | 2.50%     |
| (d) Mortality  | GAM 1994  | GAM 1994 | GAM 1994 | GAM 1994 | GAM 1994  |
| (e) Turnover   | Based on NOC experience for 1996 - 2006                     |          |          |          |           |
| (f) Retirement age                                       | Age 62, with the appropriate early retirement reduction, if |          |          |          |           |
| (g) Proportion married and age difference                | 80% married, husbands 3 years older than wives              |          |          |          |           |
| (h) Expenses   | Assume all expenses paid by company                         |          |          |          |           |
| (i) Post-retirement indexing                             | 1%  |          |          |          |           |
| (j) Asset Valuation Method                               | Market value of assets                                      |          |          |          |           |
| (k) Actuarial Cost Method                                | Unit credit   |          |          |          |           |

\* numbers may not add due to rounding

**National Oil Full-Time Hourly Union Pension Plan**  
**Solvency Valuation Results**

|  | 2011                                | 2012                                 | 2013                                 | 2013<br>Interest Rate<br>Sensitivity |
|--|-------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|
| <b>Solvency Valuation - January 1 (numbers in \$000's) *</b> |                                     |                                      |                                      |                                      |
| <b>1. Actuarial Accrued Liability:</b>                       |                                     |                                      |                                      |                                      |
| (a) Active participants                                      | 837,254                             | 1,072,545                            | 1,140,691                            | 1,528,365                            |
| (b) Deferred vested participants                             |                                     |                                      |                                      |                                      |
| (c) Pensioners   | 212,926                             | 237,728                              | 266,988                              | 292,335                              |
| (d) Total  | 1,050,180                           | 1,310,273                            | 1,407,679                            | 1,820,700                            |
| <b>2. Market Value of Assets</b>                             |                                     |                                      |                                      |                                      |
|  | 606,421                             | 693,567                              | 817,919                              | 817,919                              |
| <b>3. Solvency Deficiency: (1d)-(2)</b>                      |                                     |                                      |                                      |                                      |
|  | 443,759                             | 616,706                              | 589,760                              | 1,002,781                            |
| <b>4. Actuarial Basis</b>                                    |                                     |                                      |                                      |                                      |
| (a) Interest - Benefit paid by lump sum                      | 3.7% for 10 years<br>5% thereafter  | 2.4% for 10 years<br>3.9% thereafter | 2.5% for 10 years<br>3.7% thereafter | 1.5% for 10 years<br>2.7% thereafter |
| (a) Interest - Benefit settled by annuity purchase           | 4.5%                                | 3.31%                                | 2.96%                                | 1.96%                                |
| (b) Mortality  | UP 1994 AA20                        | UP 1994 -<br>Generational            | UP 1994 -<br>Generational            | UP 1994 -<br>Generational            |
| (c) Retirement age   | The age that produces the largest   |                                      |                                      |                                      |
| (d) Proportion married and age difference                    | 80% with spouse, Male spouses are 3 |                                      |                                      |                                      |
| (e) Asset Valuation Method                                   | Market value of assets              |                                      |                                      |                                      |
| (f) Actuarial Cost Method                                    | Unit Credit                         |                                      |                                      |                                      |

\* numbers may not add due to rounding

National Oil Full-Time Salaried Supplemental Executive Retirement Plan (SERP)

|                                       |  |
|---------------------------------------|--|
| Eligibility                           | Immediate  |
| Normal Retirement Age                 | 65   |
| Early Retirement Age                  | 55   |
| Accrued Benefit                       | Accrued Benefit calculated under the provisions of the Salaried Pension Plan without regard to legislative maximums <u>less</u> actual Accrued Benefit under the Salaried Pension Plan |
| Normal Retirement Benefit             | Accrued Benefit  |
| Early Retirement Benefit              | Accrued benefit reduced by 0.25% per month that early retirement precedes age 62 for actives participants  |
| Commencement Date and Form of Benefit | Must be same as under Salaried Pension Plan  |
| Indexing                              | None   |
| Termination Benefit                   | None   |
| Pre-Retirement Death Benefit          | None   |
| Disability Benefit                    | None   |



**Supplemental Retirement Plan**  
**Historical Valuation Results - January 1**

**2010                      2011                      2012                      2013**

**Participant Summary**

|                                     |         |         |         |         |
|-------------------------------------|---------|---------|---------|---------|
| 1. Active Participants              |         |         |         |         |
| (a) count                           | 60      | 60      | 60      | 58      |
| (b) average age                     | 52.0    | 50.0    | 51.0    | 51.5    |
| (c) average service                 | 19.1    | 17.0    | 18.0    | 18.2    |
| (d) average future working lifetime | 6.3     | 8.8     | 8.8     | 8.5     |
| (e) average earnings (prior year)   | 350,000 | 350,000 | 350,000 | 370,000 |
| 2. Deferred Vested Participants     |         |         |         |         |
| (a) count                           | -       | -       | -       | -       |
| 3. Pensioners (incl beneficiaries)  |         |         |         |         |
| (a) count                           | 30      | 30      | 30      | 32      |
| (b) average age                     | 66.0    | 66.1    | 67.1    | 67.9    |
| (c) average annual benefit          | 22,000  | 22,000  | 22,000  | 24,000  |

**Valuation Results (numbers in \$000's) \***

|   |                           |          |          |           |
|---|---------------------------|----------|----------|-----------|
| 1. Reconciliation of funded status at valuation date: |                           |          |          |           |
| (a) Accrued Benefit Obligation                        | (66,249)                  | (80,454) | (91,110) | (104,508) |
| (b) Fair Value of Assets                              | -                         | -        | -        | -         |
| (c) Funded Status: (a) + (b)                          | (66,249)                  | (80,454) | (91,110) | (104,508) |
| 2. Service Cost                                       | 1,841                     | 1,791    | 2,041    | 2,366     |
| 3. Benefit Payments                                   | 660                       | 660      | 660      | 768       |
| 4. Actuarial Basis                                    |                           |          |          |           |
| (a) Discount rate                                     | 6.50%                     | 5.50%    | 5.00%    | 4.50%     |
| (b) Salary scale                                      | 3.50%                     | 3.50%    | 3.50%    | 3.50%     |
| (c) CPI   | 2.50%                     | 2.50%    | 2.50%    | 2.50%     |
| (d) All other assumptions                             | Same as the Salaried Plan |          |          |           |

\* numbers may not add due to rounding

National Oil Part-Time DC Pension Plan

|                                      |   |
|--------------------------------------|---|
| Eligibility                          | Immediate   |
| Vesting                              | Immediate, effective July 1, 2012   |
| Employer Contributions - Base        | 3% of base pay  |
| Employer Contributions - Match       | 100% on the first 3% and 50% thereafter   |
| Employee Contributions               | Up to 6% of base pay  |
| Plan Fund                            | The employer invests the contributions in a balanced fund. There are no employee investment choices.  |
| Account Balance                      | Contributions are accumulated in member's individual account earning investment income at the rate of return earned by the Plan Fund.   |
| Benefit on Termination or Retirement | Account balance is transferred to a LIRA/LIF for the member after one year from date of termination or retirement, unless employee has since returned to employment with NOC. |
| Benefit on Death                     | Account balance is payable to named beneficiary   |

**National Oil Part-Time DC Pension Plan**  
*Historical Results - January 1*

**2010                      2011                      2012                      2013**

**Participant Summary**

|  |        |        |        |        |
|--|--------|--------|--------|--------|
| (a) number participating during prior year | 7,000  | 6,800  | 7,200  | 7,100  |
| (b) average age                            | 29.2   | 30.8   | 31.0   | 31.4   |
| (c) average base pay                       | 30,000 | 31,000 | 31,000 | 31,900 |

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

|   |         |         |         |         |
|---|---------|---------|---------|---------|
| <i>Change in Plan Assets during Prior Year:</i>     |         |         |         |         |
| Market Value of Assets at January 1 of prior year   | 71,556  | 96,044  | 119,341 | 137,575 |
| Employee Contributions during prior year            | 8,400   | 8,432   | 8,928   | 9,060   |
| Company Contributions during prior year             | 13,650  | 13,702  | 14,508  | 14,722  |
| Benefit Payments during prior year                  | (6,300) | (6,120) | (6,480) | (7,881) |
| Expenses during prior year                          | -       | -       | -       | -       |
| Investment return during prior year                 | 8,737   | 7,284   | 1,278   | 7,276   |
| Market Value of Assets at January 1 of current year | 96,044  | 119,341 | 137,575 | 160,752 |
| Rate of return during prior year                    | 11%     | 7%      | 1%      | 5%      |

*\* numbers may not add due to rounding*