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 reporting to work 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.

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 three retirement programs, all registered in Ontario:

- 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; and
- 3. a defined contribution (DC) RPP for its part-time workforce.

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 actives 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 (2013 - 2016)

| | Active | Pensioners/ Beneficiaries | Total | |
|---|--------|------------------------------|-------|--|
| 1. Participants as of January 1, 2013 | 4,032 | 851 | 4,883 | |
| - New Entrants/Rehires | 150 | - | 150 | |
| Terminated (Lump Sum Cashout) | (100) | - | (100) | |
| - Retirement | (50) | 50 | - | |
| - Death w/ Beneficiary | (5) | 5 | - | |
| - Death w/o Beneficiary | - | (14) | (14) | |
| - Net change | (5) | 41 | 36 | |
| 2. Participants as of January 1, 2014 | 4,027 | 892 | 4,919 | |
| - New Entrants/Rehires | 140 | - | 140 | |
| - Terminated (Lump Sum Cashout) | (90) | - | (90) | |
| - Retirement | (60) | 60 | - | |
| - Death w/ Beneficiary | (3) | 3 | - | |
| - Death w/o Beneficiary | (2) | (22) | (24) | |
| - Net change | (15) | 41 | 26 | |
| 3 Participants as of January 1, 2015 | 4,012 | 933 | 4,945 | |
| - New Entrants/Rehires | - | - | - | |
| - Terminated (Lump Sum Cashout) | (170) | - | (170) | |
| - Retirement | (120) | 120 | - | |
| - Death w/ Beneficiary | (2) | 2 | - | |
| - Death w/o Beneficiary | (3) | (20) | (23) | |
| - Net change | (295) | 102 | (193) | |
| 4 Participants as of January 1, 2016 | 3,717 | 1,035 | 4,752 | |

National Oil Full-Time Salaried Pension Plan Age/Svc/Earnings as of January 1, 2016

| | | Service (Years) | | | | | | |
|---------|--------|-----------------|--------|--------|--------|--------|--------|--------|
| | | | < 5 | 5-10 | 10-15 | 15-20 | >20 | Totals |
| Age | < 25 | # Participants | 110 | 80 | - | - | - | 190 |
| (Years) | | Average Salary | 37,800 | 49,000 | - | - | - | 42,500 |
| | 25-35 | # Participants | 260 | 120 | 70 | 10 | - | 460 |
| | | Average Salary | 48,900 | 60,600 | 69,000 | 71,500 | - | 55,500 |
| | 35-45 | # Participants | 170 | 170 | 180 | 190 | 90 | 800 |
| | | Average Salary | 62,100 | 70,500 | 77,800 | 84,000 | 85,100 | 75,200 |
| | 45-55 | # Participants | 130 | 160 | 150 | 300 | 640 | 1,380 |
| | | Average Salary | 67,300 | 68,900 | 78,300 | 82,000 | 83,000 | 79,200 |
| | 55-65 | # Participants | 130 | 110 | 100 | 110 | 430 | 880 |
| | | Average Salary | 65,100 | 70,100 | 75,000 | 81,100 | 83,000 | 77,600 |
| | > 65 | # Participants | 2 | 4 | 1 | - | - | 7 |
| | | Average Salary | 59,000 | 64,000 | 69,000 | - | - | 63,300 |
| | Totals | # Participants | 802 | 644 | 501 | 610 | 1,160 | 3,717 |
| | | Average Salary | 55,800 | 65,500 | 76,100 | 82,300 | 83,200 | 73,100 |

National Oil Full-Time Salaried Pension Plan

Historical Going Concern Actuarial Valuation Results

| | 2013 | 2014 | 2015 | 2016 |
|--|--------|--------|--------|--------|
| Participant Summary - January 1 | | | | |
| Active Participants | | | | |
| (a) count | 4,032 | 4,027 | 4,012 | 3,717 |
| (b) average age | 46.0 | 45.9 | 46.2 | 46.4 |
| (c) average service | 14.7 | 14.7 | 14.8 | 15.2 |
| (d) average future working lifetime | 11.0 | 12.0 | 12.0 | 12.0 |
| (e) average plan earnings (prior year) | 69,500 | 71,600 | 72,500 | 73,100 |
| Deferred Vested Participants | | | | |
| (a) count | - | - | - | - |
| Pensioners (incl beneficiaries) | | | | |
| (a) count | 851 | 892 | 933 | 1,035 |
| (b) average age | 67.7 | 68.0 | 68.6 | 68.7 |
| (c) average annual benefit | 22,800 | 23,100 | 25,500 | 26,500 |

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

| Change in Plan Assets during Prior Year: | | | | |
|---|-----------|-----------|-----------|-----------|
| Market Value of Assets at January 1 of prior year | 832,957 | 968,997 | 1,188,326 | 1,310,572 |
| Employer Contributions during prior year | 100,000 | 120,000 | 60,000 | 93,000 |
| Benefit Payments during prior year | (22,200) | (22,400) | (29,700) | (75,500) |
| Expenses during prior year | - | - | - | |
| Investment return during prior year | 58,240 | 121,729 | 91,946 | 8,971 |
| Market Value of Assets at January 1 of current year | 968,997 | 1,188,326 | 1,310,572 | 1,337,043 |
| Rate of return during prior year | 6.7% | 12.0% | 7.6% | 0.7% |
| Average Portfolio Mix During Prior Year: | | | | |
| (a) Domestic Large Cap Equities | 32% | 32% | 32% | 32% |
| (b) Domestic Small Cap Equities | 8% | 8% | 8% | 8% |
| (c) Domestic Fixed Income | 40% | 40% | 40% | 40% |
| (d) International Equities | 16% | 16% | 16% | 16% |
| (e) Real Estate | 0% | 0% | 0% | 0% |
| (f) Cash | <u>4%</u> | <u>4%</u> | <u>4%</u> | 4% |
| (g) Total | 100% | 100% | 100% | 100% |
| Asset Class Returns during Prior Year: | | | | |
| (a) Domestic Large Cap Equities | 7% | 13% | 11% | -8% |
| (b) Domestic Small Cap Equities | 7% | 38% | -2% | -13% |
| (c) Domestic Fixed Income | 4% | -1% | 9% | 3% |
| (d) International Equities | 14% | 32% | 4% | 19% |
| (e) Real Estate | 8% | 8% | 10% | -5% |
| (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

2013 2014 2015 2016

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

2016 Interest Rate Sensitivity

| | | | | | Sensitivity |
|--|--|--|----------------------------------|----------------------|-------------|
| Actuarial Accrued Liability: | | | | | |
| (a) Active participants | 915,409 | 861,242 | 946,339 | 901,675 | 1,171,318 |
| (b) Deferred vested participants | - | - | - 200 204 | - 270 704 | - |
| (c) Pensioners | 252,236 | 261,334 | 320,281 | 376,701 | 412,785 |
| (d) Total | 1,167,645 | 1,122,576 | 1,266,620 | 1,278,377 | 1,584,102 |
| 2. Actuarial Value of Assets | 968,997 | 1,188,326 | 1,310,572 | 1,337,043 | 1,337,043 |
| 3. Unfunded Actuarial Accrued Liability: (1d)-(2) | 198,648 | (65,750) | (43,951) | (58,666) | 247,059 |
| 4. Normal Cost (beg. Of year) | 62,273 | 58,588 | 63,942 | 59,321 | 79,143 |
| 5. Change in Unfunded AAL during prior year: | | | | | |
| (a) Unfunded AAL at prior valuation date | 152,104 | 198,648 | (65,750) | (43,951) | |
| (b) Adjustment for Interest | 9,126 | 10,926 | (3,781) | (2,527) | |
| (c) Normal Cost w/interest less contributions | (49,576) | (57,602) | . , , | (28,055) | |
| (d) (Gain)/Loss on investment | (5,929) | (65,750) | | 66,890 | |
| (e) (Gain)/Loss on termination | 5,000 | 3,000 | (5,300) | 2,700 | |
| (f) (Gain)/Loss on salary increases less than expected | (14,000) | (7,000) | (19,200) | (25,000) | |
| (g) (Gain)/Loss on mortality | (3,000) | (2,000) | 2,400 | (1,500) | |
| (h) (Gain)/Loss on retirement | 4,000 | (4,000) | (8,900) | (9,700) | |
| (i) (Gain)/Loss on assumption changes | 104,000 | (141,100) | 80,039 | (16,700) | |
| (j) (Gain)/Loss on expenses | - | - | - | - | |
| (k) (Gain)/Loss on all other factors | (3,078) | (872) | (945) | (822) | |
| (I) Unfunded AAL at current valuation date | 198,648 | (65,750) | (43,951) | (58,666) | |
| 6. Actuarial Basis | | | | | |
| (a) Interest | 5.50% | 5.75% | 5.75% | 5.50% | 4.50% |
| (b) Salary scale | 4.00% | 3.50% | 3.50% | 3.00% | 3.00% |
| (c) Consumer Price Index | 2.50% | 2.50% | 2.50% | 2.00% | 2.00% |
| (d) Mortality | 1994 Uninsured Pensioner Mortality - Generational | 1994 Uninsured Pensioner Mortality - Generational | CPM 2014 Private - Ge | enerational with sca | ile CPM B |
| (e) Turnover (f) Retirement age | | Based on | NOC experience for 199 Age 62 | 96-2006 | |
| (g) Proportion married and age difference | | 80% married | d; male spouses are 3 ye | ears older | |
| (h) Expenses | | | all expenses paid by cor | | |
| (i) Asset Valuation Method | | | Market value of assets | inputty | |
| (j) Actuarial Cost Method | | IV | Projected unit credit | | |

^{*} numbers may not add due to rounding

| Solvency Valuation - January 1 (numbers in | \$000's) * | | | Interest Rate Sensitivity |
|--|----------------------|-----------------------------------|-----------------------|-----------------------------------|
| Actuarial Accrued Liability: | | | | <u> </u> |
| (a) Active participants | 814,809 | 1,030,369 | 1,023,974 | 1,270,356 |
| (b) Deferred vested participants | - | - | - | - |
| (c) Pensioners | 308,133 1,122,942 | 410,458 | 446,193 | 497,145 |
| (d) Total | 1,122,942 | 1,440,827 | 1,470,167 | 1,767,501 |
| 2. Market Value of Assets | 1,188,326 | 1,310,572 | 1,337,043 | 1,310,572 |
| 3. Solvency Deficiency: (1d)-(2) | (65,384) | 130,255 | 133,124 | 456,929 |
| 4. Actuarial Basis | | | | |
| (a) Interest - Benefit paid by lump sum | 0.40/ | 0.40/ | 1.00/ | 0.00/ |
| | | 2.4% per year for | | 0.9% per year for |
| | vear thereafter | 10 years 3.7% per year thereafter | year thereafter | 10 years 2.6% per year thereafter |
| | year thereafter | year thereafter | year thereafter | year thereafter |
| (a) Interest - Benefit settled by annuity purchase | 3.9% | 2.6% | 3.1% | 2.1% |
| | | | | l |
| 42.11.48 | UP 1994 - | UP 1994 - | | ned - Generational |
| (b) Mortality | Generational | Generational | with Sca | le CPM-B |
| (c) Retirement age | | The age that produc | ces the largest value | e |
| (d) Proportion married and age difference | 809 | % married; male spo | ouses are 3 years o | lder |
| (e) Asset Valuation Method | | Market valu | ue 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

Without a spouse, single life annuity.

Optional Forms of Benefit None

Bridge Benefit \$20 per month times all years of service for retirements after

2014. The bridge benefit is payble starting from the latest of age

55 and 85 points and ceasing at age 65

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

pension payable at age 65 to named beneficiary

Disability Benefit None

National Oil Full-Time Hourly Union Pension Plan Reconciliation of Plan Participants (2013 - 2016)

| | Pensioners/ | | | | | |
|--|-------------|---------------|-------|--|--|--|
| | Active | Beneficiaries | Total | | | |
| 1. Participants as of January 1, 2013 | 6,300 | 1,190 | 7,490 | | | |
| - New Entrants/Rehires | 300 | - | 300 | | | |
| - Terminated Vested (Lump Sum Cashout) | (200) | - | (200) | | | |
| - Retirement | (80) | 80 | - | | | |
| - Death w/ Beneficiary | (5) | 5 | - | | | |
| - Death w/o Beneficiary | - | (50) | (50) | | | |
| - Net change | 15 | 35 | 50 | | | |
| 2. Participants as of January 1, 2014 | 6,315 | 1,225 | 7,540 | | | |
| - New Entrants/Rehires | 250 | - | 250 | | | |
| - Terminated Vested (Lump Sum Cashout) | (175) | - | (175) | | | |
| - Retirement | (90) | 90 | - | | | |
| - Death w/ Beneficiary | (10) | 10 | - | | | |
| - Death w/o Beneficiary | - | (45) | (45) | | | |
| - Net change | (25) | 55 | 30 | | | |
| 3. Participants as of January 1, 2015 | 6,290 | 1,280 | 7,570 | | | |
| - New Entrants/Rehires | - | - | _ | | | |
| - Terminated Vested (Lump Sum Cashout) | (250) | - | (250) | | | |
| - Retirement | (140) | 140 | - | | | |
| - Death w/ Beneficiary | (5) | 5 | - | | | |
| - Death w/o Beneficiary | - ' | (45) | (45) | | | |
| - Net change | (395) | 100 | (295) | | | |
| 4. Participants as of January 1, 2016 | 5,895 | 1,380 | 7,275 | | | |

National Oil Full-Time Hourly Union Pension Plan Age/Svc/Earnings as of January 1, 2016

| | | | | Ser | vice (Years) | | | |
|---------|--------|----------------|--------|--------|--------------|--------|--------|--------|
| | | | < 5 | 5-10 | 10-15 | 15-20 | >20 | Totals |
| Age | < 25 | # Participants | 150 | 60 | - | - | - | 210 |
| (Years) | | Average Salary | 42,900 | 48,500 | - | - | - | 44,500 |
| | 25-35 | # Participants | 270 | 100 | 80 | 5 | - | 455 |
| | | Average Salary | 44,300 | 49,800 | 54,400 | 57,600 | - | 47,400 |
| | 35-45 | # Participants | 210 | 330 | 330 | 550 | 390 | 1,810 |
| | | Average Salary | 53,300 | 50,400 | 57,900 | 60,200 | 60,900 | 57,300 |
| | 45-55 | # Participants | 130 | 170 | 310 | 555 | 990 | 2,155 |
| | | Average Salary | 53,200 | 53,600 | 60,700 | 61,500 | 62,600 | 60,800 |
| | 55-65 | # Participants | 25 | 80 | 100 | 260 | 790 | 1,255 |
| | | Average Salary | 52,800 | 54,900 | 62,800 | 63,700 | 66,300 | 64,500 |
| | > 65 | # Participants | 1 | 7 | 2 | - | - | 10 |
| | | Average Salary | 54,500 | 56,800 | 65,000 | - | - | 58,200 |
| | Totals | # Participants | 786 | 747 | 822 | 1,370 | 2,170 | 5,895 |
| | | Average Salary | 48,200 | 51,400 | 59,200 | 61,400 | 63,600 | 58,900 |

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

| | 2013 | 2014 | 2015 | 2016 |
|--|--------|--------|--------|--------|
| Participant Summary - January 1 | | | | |
| Active Participants | | | | |
| (a) count | 6,300 | 6,315 | 6,290 | 5,895 |
| (b) average age | 46.3 | 46.2 | 46.8 | 47.0 |
| (c) average service | 16.6 | 16.6 | 17.0 | 17.7 |
| (d) average future working lifetime | 10.7 | 10.9 | 10.9 | 11.0 |
| (e) average plan earnings (prior year) | 56,500 | 57,900 | 58,500 | 58,900 |
| Deferred Vested Participants | | | | |
| (a) count | - | - | - | - |
| Pensioners (incl beneficiaries) | | | | |
| (a) count | 1,190 | 1,225 | 1,280 | 1,380 |
| (b) average age | 67.8 | 68.2 | 68.8 | 68.7 |
| (c) average annual benefit | 14,200 | 14,300 | 14,900 | 15,200 |
| (d) total annual bridge benefit | n/a | n/a | n/a | 30,240 |

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

| Change in Plan Assets during Prior Year: | 000 507 | 0.17.010 | 005 757 | 4 4 40 007 |
|---|-----------|----------|-----------|------------|
| Market Value of Assets at January 1 of prior year | 693,567 | 817,919 | 995,757 | 1,149,697 |
| Employer Contributions during prior year | 95,000 | 95,000 | 100,000 | 160,000 |
| Benefit Payments during prior year | (19,500) | (19,500) | (25,000) | (65,000) |
| Expenses during prior year | - | - | - | - |
| Investment return during prior year | 48,852 | 102,338 | 78,941 | 8,141 |
| Market Value of Assets at January 1 of current year | 817,919 | 995,757 | 1,149,697 | 1,252,838 |
| Rate of return during prior year | 6.7% | 12.0% | 7.6% | 0.7% |
| Average Portfolio Mix During Prior Year: | | | | |
| (a) Domestic Large Cap Equities | 32% | 32% | 32% | 32% |
| (b) Domestic Small Cap Equities | 8% | 8% | 8% | 8% |
| (c) Domestic Fixed Income | 40% | 40% | 40% | 40% |
| (d) International Equities | 16% | 16% | 16% | 16% |
| (e) Real Estate | 0% | 0% | 0% | 0% |
| (f) Cash | <u>4%</u> | 4% | <u>4%</u> | 4% |
| (g) Total | 100% | 100% | 100% | 100% |
| Asset Class Returns during Prior Year: | | | | |
| (a) Domestic Large Cap Equities | 7% | 13% | 11% | -8% |
| (b) Domestic Small Cap Equities | 7% | 38% | -2% | -13% |
| (c) Domestic Fixed Income | 4% | -1% | 9% | 3% |
| (d) International Equities | 14% | 32% | 4% | 19% |
| (e) Real Estate | 8% | 8% | 10% | -5% |
| (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

2013 2014 2015 2016

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

2016 Interest Rate Sensitivity

| | | | | | | Sensitivity |
|---|-----------------|--------|---------------|------------------------|------------------|------------------|
| Actuarial Accrued Liability: | | | | | | |
| Active Multiplier | \$ 80 | \$ | 80 | \$ 80 | \$ 80 | \$ 80 |
| (a) Active participants | 688,339 | | 730,256 | 859,362 | 938,043 | 1,175,234 |
| (b) Deferred vested participants | - | | - | - | - | - |
| (c) Pensioners | 221,364 | | 233,282 | 269,585 | 302,577 | 331,555 |
| (d) Total | 909,703 | | 963,538 | 1,128,947 | 1,240,620 | 1,506,789 |
| | , | | , | , , | , , | , , |
| 2. Actuarial Value of Assets | 817,919 | | 995,757 | 1,149,697 | 1,252,838 | 1,252,838 |
| | | | | | | |
| 3. Unfunded Actuarial Accrued Liability: (1d)-(2) | 91,784 | | (32,218) | (20,751) | (12,219) | 253,951 |
| 4. Normal Cost (beg. Of year) | 41,466 | | 43,991 | 50,551 | 52,997 | 66,397 |
| 5. Change in Unfunded AAL during prior year: | | | | | | |
| (a) Unfunded AAL at prior valuation date | 75,235 | | 91,784 | (32,218) | (20,751) | |
| (b) Adjustment for Interest | 4,514 | | 5,048 | (1,853) | (1,193) | |
| (c) Normal Cost w/interest less contributions | (61,579) | | (53,866) | (59,025) | (111,143) | |
| (d) (Gain)/Loss on investment | (4,973) | | (55,276) | (19,529) | 60,698 | |
| (e) (Gain)/Loss on termination | 7,000 | | (6,000) | 900 | 3,000 | |
| (f) (Gain)/Loss on plan amendment | - | | - | 31,542 | - | |
| (g) (Gain)/Loss on mortality | (9,000) | | (5,000) | (3,200) | (2,900) | |
| (h) (Gain)/Loss on retirement | (6,000) | | (9,000) | (7,300) | 1,700 | |
| (i) (Gain)/Loss on assumption changes | 80,000 | | 500 | 69,416 | 59,022 | |
| (j) (Gain)/Loss on expenses | - | | - | - | - | |
| (k) (Gain)/Loss on all other factors | 6,587 | | (409) | 515 | (652) | |
| (I) Change in active benefit multiplier | | | (100) | - | (002) | |
| (m) Unfunded AAL at current valuation date | 91,784 | | (32,218) | (20,751) | (12,219) | 1 |
| 6. Actuarial Basis | | | | | | |
| (a) Interest | 5.50% | | 5.75% | 5.75% | 5.50% | 4.50% |
| (b) Salary scale | N/A | | N/A | 0.7070 N/A | N/A | 4.5070 N/A |
| (c) Consumer Price Index | 2.50% | | 2.50% | 2.50% | 2.00% | |
| (c) Consumer rince index | 2.50 /0 | 10 | 994 Uninsured | 2.5070 | 2.0070 | 2.0070 |
| | | 18 | | CDM 2014 Drivete | CDM 2014 Drivete | CPM 2014 Private |
| | | | | | | |
| (al) Mantality | C A B A 4 O O A | | Mortality - | - Generational | | |
| (d) Mortality | GAM 1994 | | | | | with scale CPM B |
| (e) Turnover | , | 0 | | OC experience for | | |
| (f) Retirement age | F | age 62 | | ropriate early retirer | | ıy |
| (g) Proportion married and age difference | | | | ; male spouses are | | |
| (h) Expenses | | | Assume a | Ill expenses paid by | company | |
| (i) Post-retirement indexing | | | | 1% | to. | |
| (j) Asset Valuation Method | | | IVI | larket value of asse | เร | |
| (k) Actuarial Cost Method | | | | Unit credit | | |

^{*} numbers may not add due to rounding

National Oil Full-Time Hourly Union Pension Plan

Solvency Valuation Results

| Solvency Valuation - January 1 (numbers in | \$000's) * | | | Interest Rate Sensitivity |
|--|---------------------------|---|---|---|
| Actuarial Accrued Liability: (a) Active participants (b) Programme Transfer of the Control of the | 942,512 | 1,281,243 | 1,385,136 | 1,721,425 |
| (b) Deferred vested participants (c) Pensioners | 253,923 | 323,957 | - 381,769 | - 423,757 |
| (d) Total | 1,196,435 | 1,605,200 | 1,766,905 | 2,145,182 |
| 2. Market Value of Assets | 995,757 | 1,149,697 | 1,252,838 | 1,252,838 |
| 3. Solvency Deficiency: (1d)-(2) | 200,678 | 455,502 | 514,066 | 892,344 |
| 4. Actuarial Basis (a) Interest - Benefit paid by lump sum | | | | |
| (a) moreous zerompaie sy iamp cam | | 2.4% per year for 10 years 3.7% per year thereafter | 1.9% per year for 10 years 3.6% per year thereafter | 0.9% per year for 10 years 2.6% per year thereafter |
| (a) Interest - Benefit settled by annuity purchase | 3.9% | 2.6% | 3.1% | 2.1% |
| (b) Mortality | UP 1994 - Generational | UP 1994 - Generational | | ned - Generational le CPM-B |
| (c) Retirement age | | The age that produ | ces the largest value | e |
| (d) Proportion married and age difference | 80 | % married; male sp | ouses are 3 years o | lder |
| (e) Asset Valuation Method | | Market val | ue of assets | |
| (f) Actuarial Cost Method | | Unit | Credit | |

^{*} numbers may not add due to rounding

National Oil Part-Time DC Pension Plan

Retirement

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 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

ample of with NOC

employment with NOC.

Benefit on Death Account balance is payable to named beneficiary

National Oil Part-Time DC Pension Plan

Historical Results - January 1

| | 2013 | 2014 | 2015 | 2016 |
|---|-------------------------|-------------------------|-------------------------|-------------------------|
| Participant Summary | | | | |
| (a) number participating during prior year(b) average age(c) average base pay | 7,100 31.4 31,900 | 7,200 31.0 32,000 | 7,300 31.6 32,300 | 7,100 31.2 32,200 |

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

| 137.575 | 160.752 | 189.569 | 216,083 |
|---------|----------------------------------|--|---|
| • | 9.216 | 9.432 | 9,145 |
| 14,722 | 14,976 | 15,326 | 14,860 |
| (7,881) | (8,849) | (10,059) | (11,044) |
| - | - | - | - |
| 7,276 | 13,474 | 11,815 | 4,451 |
| 160,752 | 189,569 | 216,083 | 233,495 |
| 5% | 8% | 6% | 2% |
| | (7,881) - 7,276 160,752 | 9,060 9,216 14,722 14,976 (7,881) (8,849) 7,276 13,474 160,752 189,569 | 9,060 9,216 9,432 14,722 14,976 15,326 (7,881) (8,849) (10,059) 7,276 13,474 11,815 160,752 189,569 216,083 |

^{*} numbers may not add due to rounding