

AIRGAS INC  
Form 11-K  
June 27, 2011  
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**UNITED STATES**  
**SECURITIES AND EXCHANGE COMMISSION**

Washington, D.C. 20549

**FORM 11-K**

(Mark One)

**ANNUAL REPORT PURSUANT TO SECTION 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the fiscal year ended December 31, 2010

OR

**TRANSITION REPORT PURSUANT TO SECTION 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the transition period from \_\_\_\_\_ to \_\_\_\_\_

Commission file numbers: 33-25419, 33-64058 and 333-75256

A. Full title of the plan and the address of the plan, if different from that of the issuer named below:

**Airgas, Inc. 401(k) Plan**

B. Name of the issuer of the securities held pursuant to the plan and the address of its principal executive office:

**Airgas, Inc.**

**259 North Radnor-Chester Road**

**Suite 100**

**Radnor, PA 19087-5283**

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REQUIRED INFORMATION

(1) Financial Statements:

The following financial statements, including the Report of Independent Registered Public Accounting Firm, of the Airgas, Inc. 401(k) Plan are submitted herewith:

Statements of Net Assets Available for Benefits as of December 31, 2010 and 2009

Statements of Changes in Net Assets Available for Benefits for the years ended December 31, 2010 and 2009

Notes to the Financial Statements

Supplemental Schedule 1 Schedule H, Line 4i Schedule of Assets (Held at End of Year) as of December 31, 2010

The schedules for which provision is made in the applicable accounting regulations of the Securities and Exchange Commission are included in the aforementioned financial statement of the Airgas, Inc. 401(k) Plan.

(2) Exhibit:

23 Consent of Independent Registered Public Accounting Firm

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**AIRGAS, INC. 401(k) PLAN**

Financial Statements and

Supplemental Schedule

December 31, 2010 and 2009

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**AIRGAS, INC. 401(k) PLAN**

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**Report of Independent Registered Public Accounting Firm**

To Participants and Administrator of the Airgas, Inc. 401(k) Plan:

We have audited the accompanying statements of net assets available for benefits of the Airgas, Inc. 401(k) Plan (the Plan ) as of December 31, 2010 and 2009, and the related statements of changes in net assets available for benefits for the years then ended. These financial statements are the responsibility of the Plan s management. Our responsibility is to express an opinion on these financial statements based on our audits.

We conducted our audits in accordance with the standards of the Public Company Accounting Oversight Board (United States). Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation. We believe that our audits provide a reasonable basis for our opinion.

In our opinion, the financial statements referred to above present fairly, in all material respects, the net assets available for benefits of the Plan as of December 31, 2010 and 2009, and the changes in net assets available for benefits for the years then ended, in conformity with U.S. generally accepted accounting principles.

Our audits were performed for the purpose of forming an opinion on the basic financial statements taken as a whole. The supplemental schedule of Schedule H, Line 4i - Schedule of Assets (Held at End of Year) as of December 31, 2010 is presented for the purpose of additional analysis and is not a required part of the basic financial statements but is supplementary information required by the Department of Labor s *Rules and Regulations for Reporting and Disclosure under the Employee Retirement Income Security Act of 1974*. The supplemental schedule is the responsibility of the Plan s management. The supplemental schedule has been subjected to the auditing procedures applied in the audits of the basic financial statements and, in our opinion, is fairly stated in all material respects in relation to the basic financial statements taken as a whole.

/s/ KPMG LLP

Philadelphia, Pennsylvania  
June 27, 2011

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## Statements of Net Assets Available for Benefits

Years Ended December 31, 2010 and 2009

	2010	2009
<b>Assets:</b>		
Investments (Note 3)	\$ 513,906,256	\$ 430,099,506
<b>Receivables:</b>		
Employee contributions	1,778,517	1,590,287
Employer contributions	518,778	476,282
Notes receivable from participants	17,860,376	15,605,983
<b>Total receivables</b>	<b>20,157,671</b>	<b>17,672,552</b>
<b>Total assets</b>	<b>534,063,927</b>	<b>447,772,058</b>
<b>Liabilities:</b>		
Refunds due to participants	(275,485)	
<b>Total liabilities</b>	<b>(275,485)</b>	
Net assets available for benefits at fair value	533,788,442	447,772,058
Adjustment from fair value to contract value for fully benefit-responsive investment contracts	(3,468,490)	(1,540,777)
<b>Net assets available for benefits</b>	<b>\$ 530,319,952</b>	<b>\$ 446,231,281</b>

See accompanying notes to the financial statements.

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## Statements of Changes in Net Assets Available for Benefits

Years Ended December 31, 2010 and 2009

	2010	2009
<b>Additions:</b>		
Additions to net assets attributable to:		
Investment income:		
Net appreciation in fair value of investments	\$ 61,564,015	\$ 60,894,307
Interest and dividends	11,207,245	10,083,758
Total investment income, net	72,771,260	70,978,065
<b>Contributions:</b>		
Employee	33,462,344	31,869,000
Employer	9,547,658	8,823,541
Rollovers	3,226,033	1,877,138
Total contributions	46,236,035	42,569,679
Transfers from other plans and other additions	33,766	1,063,801
Total additions	119,041,061	114,611,545
<b>Deductions:</b>		
Benefits paid to participants	(34,572,435)	(25,427,450)
Administrative fees	(379,955)	(362,766)
Total deductions	(34,952,390)	(25,790,216)
Net additions	84,088,671	88,821,329
<b>Net assets available for benefits:</b>		
Beginning of year	446,231,281	357,409,952
End of year	\$ 530,319,952	\$ 446,231,281

See accompanying notes to the financial statements.



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**AIRGAS, INC. 401(k) PLAN**

Notes to the Financial Statements

**(1) Description of the Plan**

The following description of the Airgas, Inc. 401(k) Plan (the Plan) provides general information only. Participants should refer to the Plan document for more complete information.

**(a) General**

The Plan is a defined contribution plan covering substantially all employees of Airgas, Inc. and subsidiaries (Airgas or the Company). Included in the assets of the Plan are rollovers and transfers from other plans of acquired companies, where applicable. The Plan is subject to the provisions of the Employee Retirement Income Security Act of 1974 (ERISA). The Vanguard Fiduciary Trust Company serves as the trustee for the Plan.

**(b) Contributions**

*Employee*

The Plan permits a participant to defer up to 50% of eligible compensation, subject to the maximum dollar limitation in the calendar year as prescribed by the Internal Revenue Service (IRS). The Plan allows both 401(k) contributions, which are made from pre-tax earnings and are fully taxable as ordinary income at the time of distribution, as well as Roth 401(k) contributions. Under the Roth 401(k) contribution election, participants' contributions are made from after-tax earnings that will be tax-free at the time of distribution. Participants are allowed to make both 401(k) and Roth 401(k) contributions into the Plan. The employee contributions receivable at December 31, 2010 and 2009 represent payroll contributions withheld through the end of each calendar year that were received by the Plan in the subsequent year.

*Employer*

Contributions to the Plan by the Company are made on a matched basis at a rate of 50% of participant deferred compensation. The employer match is applied on employee contributions of up to 4% of eligible compensation (i.e., maximum employer match is 2% of eligible compensation). Although employees may participate in the Plan immediately upon joining the Company, Plan participants are not eligible for Company matching contributions until they have completed one year of service with the Company. The employer contributions receivable at December 31, 2010 and 2009 represent Company matching contributions through the end of each calendar year that were received by the Plan in the subsequent year.

*Rollovers*

Contributions in 2010 and 2009 include \$3,226,033 and \$1,877,138, respectively, of rollover contributions from newly hired employees and employees associated with businesses acquired by the Company. Rollovers reflect employee elections to rollover funds from their former plans into the Plan.

*Refund of Excess Contributions*

In accordance with rules prescribed by the Internal Revenue Code (IRC), the trustee performed certain tests of employee contributions to ensure that highly compensated employees do not contribute on average a higher percentage of their

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**AIRGAS, INC. 401(k) PLAN**

Notes to the Financial Statements (Continued)

income than that of non-highly compensated employees. Additionally, the trustee performed a test of employee contributions to determine that individual participant contribution levels did not exceed the 2010 IRS contribution limit of \$16,500. The Plan will distribute a total of \$275,485 in excess contributions to affected participants for the year ended December 31, 2010 as a result of the compliance testing. No refunds were required for the year ended December 31, 2009.

***(c) Participant Accounts***

Contributions are invested as directed by each participant in 15 separate investment funds. Each participant may designate, by electronic monitoring, how the contributions to his or her account are to be allocated among the 15 funds. Participants are required to allocate contributions to the funds in increments of 1% of total contributions. In the event a participant fails to submit an allocation, contributions will be invested in the Vanguard LifeStrategy Conservative Growth Fund. In addition to the above initial election, participants may elect, by contacting the trustee, to transfer monies among the investment funds in 1% increments of the total funds credited to their account. Interest, dividends and other income (losses) earned by the investment funds, net of administrative fees, are reinvested in the same fund. Such amounts are allocated to participants based upon the proportion of a participant's balance to the total fund balance.

***(d) Participant Loans***

The Plan administrator may, upon the application of a participant, direct the trustee to make a loan to such a participant. The maximum the participant may borrow is limited to the lesser of 50% of the participant's Plan account balance or \$50,000. The minimum loan amount is \$1,000 and loans are secured by 50% of the participant's Plan account balance. Participant loans bear interest at a rate equal to prime (as of the date of the loan) plus 2% and provide for periodic repayment over a reasonable period of time not to exceed five years for general-purpose loans and 30 years for principal residence loans. The prime rate was 3.25% at December 31, 2010 and 2009. Interest rates on outstanding participant loans at December 31, 2010 ranged from 5% to 11%, with an average interest rate of 6%. Interest rates on outstanding participant loans at December 31, 2009 ranged from 4% to 11%, with an average interest rate of 7%.

When a participant defaults on a loan obtained from the Plan, the Plan administrator will report the amount of default to the IRS as a distribution from the Plan. The Plan participant may then be subject to taxes and penalties related to the distribution.

***(e) Vesting***

Participants are immediately vested in all contributions. In addition, all earnings (losses) on such investments are fully vested.

***(f) Payment of Benefits***

Upon retirement, death or termination of service, participants or beneficiaries are entitled to a distribution equal to the total value of their accounts. Such distributions are generally payable in cash.

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**AIRGAS, INC. 401(k) PLAN**

Notes to the Financial Statements (Continued)

Participants experiencing serious financial hardships may be entitled to a distribution upon approval by the Plan administrator.

**(g) Administrative Expenses**

Recordkeeping and loan administrative fees are paid by the Plan. Loan origination fees are paid by Plan participants and included in notes receivable from participants on the schedule of net assets. Stock administration, compliance testing, audit, legal, hardship withdrawal processing and company acquisition processing fees are paid by Airgas.

**(2) Summary of Significant Accounting Policies**

**(a) Basis of Accounting**

The accompanying financial statements of the Plan have been prepared on the accrual basis of accounting and present net assets available for benefits and changes in those net assets.

**(b) New Accounting Pronouncements**

In September 2010, the Financial Accounting Standards Board ( FASB ) issued amended guidance with respect to the classification and measurement of loans to participants by defined contribution plans. The amended guidance requires that participant loans be classified as notes receivable from participants, which are segregated from plan investments and measured at their unpaid principal balance plus any accrued but unpaid interest. The Plan adopted the guidance for its December 31, 2010 financial statements and applied the guidance on a retrospective basis to the prior period. As a result, participant loans are classified as notes receivable from participants on the statements of net assets available for benefits and are no longer subject to fair value disclosure requirements.

In January 2010, the FASB issued amended guidance with respect to the disclosure of fair value measurements. Specifically, the new guidance requires disclosure of amounts transferred in and out of Levels 1 and 2 fair value measurements, a reconciliation presented on a gross basis rather than a net basis of activity in Level 3 fair value measurements, greater disaggregation of the assets and liabilities for which fair value measurements are presented and more robust disclosure of the valuation techniques and inputs used to measure Levels 2 and 3 fair value measurements. The Plan adopted the guidance on January 1, 2010, with the exception of the new guidance around the Level 3 activity reconciliation, which is effective for years beginning after December 15, 2010. See Note 4 for the Plan's fair value measurement disclosures.

**(c) Investments**

Units of the Airgas Common Stock Fund are valued based on the combined quoted market prices of the underlying shares of Airgas common stock and a money market component. Investments in shares of registered investment companies (or mutual funds) are valued at the net asset values of shares held by the Plan at year-end. Units of the Vanguard Retirement Savings Trust (the Trust ) are valued at the net asset value at year-end (discussed below).

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**AIRGAS, INC. 401(k) PLAN**

Notes to the Financial Statements (Continued)

The Plan invests in fully benefit-responsive investment contracts through the Trust. In accordance with the accounting guidance for fully benefit-responsive investment contracts in employee benefit plans, the statements of net assets available for benefits present the fair value of the Trust and the adjustment from fair value to contract value. The fair value of the Plan's interest in the Trust is based on information reported by the Trust at year-end. Depending on the mix of investments, fair value is determined based on the expected future cash flows for each contract discounted to present value, and the aggregate market values of the underlying investments in mutual funds, bond trusts and other investments. The contract value of the Trust represents contributions plus earnings, less participant withdrawals and administrative expenses.

Purchases and sales of investments are recorded on a trade-date basis. The average cost method is followed in determining the cost of investments sold. Interest income is accrued when earned. Dividend income is recorded on the ex-dividend date. Capital gain distributions are included in dividend income.

Investment options as of December 31, 2010 and 2009 were as follows:

The *Airgas Common Stock Fund* invests in Airgas common stock to provide for the possibility of long-term growth through increases in the value of the stock, although a portion of the fund may be invested in cash or cash equivalents to maintain liquidity and avoid excessive turnover of Airgas common stock held in the fund. The fund value per unit was \$30.88 and \$23.58 at December 31, 2010 and 2009, respectively. The fair value per share of Airgas common stock was \$62.46 and \$47.60 at December 31, 2010 and 2009, respectively. At December 31, 2010, 3,534 Plan participants were invested in the fund.

The *Vanguard Explorer Fund Investor Shares* seeks to provide long-term growth of capital by investing in a diversified group of small-company stocks with prospects for above-average growth. The value per share was \$72.90 and \$57.30 at December 31, 2010 and 2009, respectively. At December 31, 2010, 2,391 Plan participants were invested in the fund.

The *Vanguard International Growth Fund Investor Shares* seeks to provide long-term growth of capital by investing in stocks of high-quality, seasoned companies based outside the United States. Stocks are selected from more than 15 countries. The value per share was \$19.34 and \$16.99 at December 31, 2010 and 2009, respectively. At December 31, 2010, 2,918 Plan participants were invested in the fund.

The *Vanguard U.S. Growth Fund Investor Shares* seeks to provide long-term growth of capital by investing in large, high-quality, seasoned U.S. companies with records of exceptional growth and above-average prospects for future growth. The value per share was \$18.25 and \$16.46 at December 31, 2010 and 2009, respectively. At December 31, 2010, 2,193 Plan participants were invested in the fund.

The *Vanguard 500 Index Fund Investor Shares* seeks to provide long-term growth of capital and income from dividends by holding each of the 500 stocks that make up the unmanaged Standard & Poor's 500 Composite Stock Price Index, a widely recognized benchmark of U.S. market performance. The value per share was \$115.82 and \$102.67 at December 31, 2010 and 2009, respectively. At December 31, 2010, 3,107 Plan participants were invested in the fund.

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**AIRGAS, INC. 401(k) PLAN**

Notes to the Financial Statements (Continued)

The *Vanguard Wellington Fund Investor Shares* seeks to provide income and long-term growth of capital, without undue risk to capital, by investing approximately 65% of its assets in stocks and the remaining 35% in bonds. The value per share was \$31.10 and \$28.85 at December 31, 2010 and 2009, respectively. At December 31, 2010, 2,717 Plan participants were invested in the fund.

The *Vanguard Morgan Growth Fund Investor Shares* seeks to provide long-term capital appreciation by investing in mid-sized and large companies that are expected to have above average growth in sales and profits. The value per share was \$18.03 and \$15.27 at December 31, 2010 and 2009, respectively. At December 31, 2010, 739 Plan participants were invested in the fund.

The *Vanguard Windsor II Fund Investor Shares* seeks to provide long-term capital appreciation and income by investing mainly in mid-sized and large companies whose stocks are considered by the fund's advisor to be undervalued. The value per share was \$25.67 and \$23.68 at December 31, 2010 and 2009, respectively. At December 31, 2010, 849 Plan participants were invested in the fund.

The *Vanguard LifeStrategy Growth Fund* seeks to provide long-term growth of capital and income by investing in four Vanguard funds: a domestic stock fund, an international stock fund, a bond fund and an asset allocation fund. The portfolio's asset allocation ranges are expected to be 80% stocks and 20% bonds. The value per share was \$22.06 and \$19.56 at December 31, 2010 and 2009, respectively. At December 31, 2010, 2,018 Plan participants were invested in the fund.

The *Vanguard LifeStrategy Moderate Growth Fund* seeks to provide income and long-term growth of capital and income by investing in four Vanguard funds: a domestic stock fund, an international stock fund, a bond fund and an asset allocation fund. The portfolio's asset allocation ranges are expected to be 60% stocks and 40% bonds. The value per share was \$19.57 and \$17.69 at December 31, 2010 and 2009, respectively. At December 31, 2010, 1,702 Plan participants were invested in the fund.

The *Vanguard LifeStrategy Conservative Growth Fund* seeks to provide income and moderate long-term growth of capital and income by investing in five Vanguard funds: a domestic stock fund, an international stock fund, two bond funds and an asset allocation fund. The portfolio's asset allocation ranges are expected to be 40% stocks and 60% bonds and short-term cash investments. The value per share was \$16.36 and \$15.12 at December 31, 2010 and 2009, respectively. At December 31, 2010, 6,273 Plan participants were invested in the fund.

The *Vanguard LifeStrategy Income Fund* seeks to provide a high level of income by investing in four Vanguard funds: a stock fund, two bond funds and an asset allocation fund. The portfolio's asset allocation ranges are expected to be 20% stocks, 60% bonds and 20% short-term cash reserves. The value per share was \$14.06 and \$13.27 at December 31, 2010 and 2009, respectively. At December 31, 2010, 901 Plan participants were invested in the fund.

The *Vanguard Total Bond Market Index Fund Investor Shares* seeks to provide a high level of interest income by attempting to match the performance of the unmanaged Barclay's Capital Aggregate Bond Index, a widely recognized measure of the entire taxable U.S. bond market. The value per share was \$10.60 and \$10.35 at December 31, 2010 and 2009, respectively. At December 31, 2010, 2,353 Plan participants were invested in the fund.

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**AIRGAS, INC. 401(k) PLAN**

Notes to the Financial Statements (Continued)

The *Vanguard Retirement Savings Trust* seeks stability of principal and a high level of current income consistent with a two-to-three year average maturity. The Trust is a tax-exempt common collective trust invested primarily in fully-benefit responsive investment contracts issued by insurance companies and commercial banks, and similar types of fixed-principal investments. The Trust intends to maintain a constant net asset value of \$1.00 per share. The principal and interest of these contracts are not guaranteed. At December 31, 2010, 3,576 Plan participants were invested in the Trust.

The *Vanguard Prime Money Market Fund* seeks to provide income and moderate growth of capital and income by investing in high-quality, short-term securities. The fund intends to maintain a constant net asset value of \$1.00 per share. At December 31, 2010, two Plan participants were invested in the fund.

***(d) Notes Receivable from Participants***

Notes receivable from participants represent participant loans that are measured at their unpaid principal balance plus any accrued but unpaid interest.

***(e) Use of Estimates***

The preparation of the financial statements in accordance with U.S. generally accepted accounting principles ( GAAP ) requires the Plan administrator to make estimates that affect the reported amounts of assets and liabilities and changes therein, and disclosure of contingent assets and liabilities. Actual results could differ from those estimates.

***(f) Risks and Uncertainties***

The Plan invests in various investment securities. Investment securities are exposed to various risks such as interest rate, market and credit risks. Due to the level of risk associated with certain investment securities, it is at least reasonably possible that changes in the values of investment securities will occur in the near term and that such changes could materially affect participants' account balances and the amounts reported in the statement of net assets available for benefits.

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## Notes to the Financial Statements (Continued)

**(3) Investments**

The following investments represent 5% or more of the net assets available for benefits at December 31, 2010 and 2009:

	2010	2009
Airgas Common Stock Fund	\$ 94,785,451	\$ 96,191,246
Vanguard 500 Index Fund Investor Shares	42,782,578	34,791,412
Vanguard Explorer Fund Investor Shares	27,424,455 <sup>(1)</sup>	19,120,893
Vanguard International Growth Fund Investor Shares	30,173,165	23,936,450
Vanguard LifeStrategy Conservative Growth Fund	50,490,461	37,314,879
Vanguard Retirement Savings Trust	84,613,168 <sup>(2)</sup>	69,731,571
Vanguard Total Bond Market Index Fund Investor Shares	31,327,417	24,034,584
Vanguard U.S. Growth Fund Investor Shares	26,966,630	24,016,138
Vanguard Wellington Fund Investor Shares	49,398,962	43,328,601

<sup>(1)</sup> Represents 5% or more of net assets available for benefits at December 31, 2010 and less than 5% of net assets available for benefits at December 31, 2009.

<sup>(2)</sup> Stated at contract value.

During the years ended December 31, 2010 and 2009, the net appreciation in the fair value of investments (including realized gains and losses) was as follows:

	2010	2009
Airgas Common Stock Fund	\$ 30,713,693	\$ 17,368,039
Mutual funds	30,850,322	43,526,268
Net appreciation in fair value of investments	\$ 61,564,015	\$ 60,894,307

Fully benefit-responsive investment contracts included within the Trust serve as an option in a carefully structured investment plan. Plan participants may ordinarily direct the withdrawal or transfer of all or a portion of their investments in the Trust at contract value. Contract value represents contributions made plus interest accrued at the contract rate, less participant withdrawals and administrative expenses.

There are no reserves against the contract value for credit risk of the contract issuer or otherwise. The average yield was 3.36% for 2010 and 3.15% for 2009. The average crediting interest rate was 3.58% for 2010 and 3.31% for 2009. The crediting interest rate is based on a formula agreed upon with the issuer, but may not be less than zero. Such interest rates are reviewed on a quarterly basis for resetting.

The existence of certain conditions can limit the Trust's ability to transact at contract value with issuers of its investment contracts. Specifically, any event outside the normal operation of the Trust that causes a withdrawal from an investment contract may result in a negative market value adjustment with respect to the withdrawal. Examples of such events include, but are not limited to, partial or complete legal termination of the Trust or a unit holder, tax disqualification of the Trust or unit holder, and certain Trust amendments if issuers' consent is not obtained. As of December 31, 2010, the occurrence of an event outside the normal operation of the Trust that would cause a withdrawal from an investment contract is not considered to be probable.





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## Notes to the Financial Statements (Continued)

Summarized below are the carrying and fair values of the Trust, which is reflected at its carrying value in the Plan's net assets available for benefits on the statements of net assets available for benefits at December 31, 2010 and 2009. The computation of the fair value of the Trust is performed by the Company.

	2010 Carrying Value	2010 Fair Value	2009 Carrying Value	2009 Fair Value
Vanguard Retirement Savings Trust	\$ 84,613,168	\$ 88,081,658	\$ 69,731,571	\$ 71,272,348

Refer to Note 4 for disclosures about fair value measurements.

**(4) Fair Value Measurements**

Fair value is defined as the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. Assets and liabilities recorded at fair value are classified based upon the level of judgment associated with the inputs used to measure their fair value. The hierarchical levels related to the subjectivity of the valuation inputs are defined as follows:

Level 1 inputs are quoted prices (unadjusted) in active markets for identical assets or liabilities at the measurement date.

Level 2 inputs are inputs, other than quoted prices included within Level 1, that are observable, directly or indirectly through corroboration with observable market data at the measurement date.

Level 3 inputs are unobservable inputs that reflect management's best estimate of the assumptions (including assumptions about risk) that market participants would use in pricing the asset or liability at the measurement date.

The carrying values of employee contributions receivable, employer contributions receivable and refunds due to participants approximate fair value.

The following is a description of the valuation methodologies used for assets measured at fair value:

*Airgas Common Stock Fund:* Valued based on the combined quoted market prices in active markets of the underlying shares of Airgas common stock and a money market component.

*Mutual funds:* Valued at the net asset value of shares held by the Plan at year-end.

*Vanguard Retirement Savings Trust:* Valued, as reflected in the Plan's investments at fair value on the statements of net assets available for benefits at December 31, 2010 and 2009, based on the expected future cash flows for each contract discounted to present value using observable market data as inputs, and the aggregate observable market values of the underlying investments in mutual funds, bond trusts and other investments.

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## Notes to the Financial Statements (Continued)

The Plan's assets measured at fair value on a recurring basis at December 31, 2010 and 2009 are categorized in the table below based on the lowest level of significant input to the valuation:

	Balance at December 31, 2010	Quoted prices in active markets Level 1	Significant other observable inputs Level 2	Significant unobservable inputs Level 3
Airgas Common Stock Fund	\$ 94,785,451	\$ 94,785,451	\$	\$
Mutual funds	331,039,147	331,039,147		
Vanguard Retirement Savings Trust	88,081,658		88,081,658	
Total assets measured at fair value	\$ 513,906,256	\$ 425,824,598	\$ 88,081,658	\$

  

	Balance at December 31, 2009	Quoted prices in active markets Level 1	Significant other observable inputs Level 2	Significant unobservable inputs Level 3
Airgas Common Stock Fund	\$ 96,191,246	\$ 96,191,246	\$	\$
Mutual funds	262,635,912	262,635,912		
Vanguard Retirement Savings Trust	71,272,348		71,272,348	
Total assets measured at fair value	\$ 430,099,506	\$ 358,827,158	\$ 71,272,348	\$

The methods described above may produce a fair value calculation that may not be indicative of net realizable value or reflective of future fair values. Furthermore, while the Plan believes its valuation methods are appropriate and consistent with other market participants, the use of different methodologies or assumptions to determine the fair value of certain financial instruments could result in a different fair value measurement at the reporting date.

**(5) Tax Status**

The Plan document has been restated for recent law changes. The Plan sponsor adopted the restated version of a volume submitter plan as of January 1, 2007. In prior years, the Plan was filed as a non-standardized prototype plan document. The IRS has determined and informed the volume submitter Plan sponsor, by a letter dated September 4, 2001, that the Plan and related trust are designed in accordance with applicable sections of the IRC. The IRS determined that the Plan is qualified under IRC Section 401, by a letter dated December 31, 2002.

GAAP requires Plan management to evaluate tax positions taken by the Plan and recognize a tax liability (or asset) if the Plan has taken an uncertain position that more likely than not would not be sustained upon examination by the IRS. The Plan administrator has analyzed the tax positions taken by the Plan, and has concluded that as of December 31, 2010, there are no uncertain positions taken or expected to be taken that would require recognition of a liability (or asset) or disclosure in the financial statements. The Plan is subject to routine audits by taxing jurisdictions; however, there are currently no audits for any tax periods in progress. The Plan administrator believes it is no longer subject to income tax examinations for years prior to 2010.

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**AIRGAS, INC. 401(k) PLAN**

Notes to the Financial Statements (Continued)

The Plan administrator believes that the Plan is designed and is currently being operated in compliance with the applicable requirements of the IRC. The Plan filed an application for an updated determination letter with the IRS on April 30, 2010. To date, the Plan has not yet received a response from the IRS.

**(6) Related Party Transactions**

The Plan investments are managed by an affiliate of Vanguard Fiduciary Trust Company (the Plan trustee). The Airgas Common Stock Fund invests in common stock of the Company. Investment transactions of the Plan, therefore, qualify as party-in-interest transactions, but are not prohibited transactions.

**(7) Plan Termination**

Although it has not expressed any intent to do so, the Company has the right under the Plan to discontinue its contributions at any time and to terminate the Plan subject to the provisions of ERISA. Upon termination of the Plan, participants would remain fully vested in all amounts credited to their accounts under the Plan.

**(8) Defaulted Loans**

During the year ended December 31, 2010, there were 200 participants who were in default of their loans, three of which were active employees. Loans in the amount of \$718,359 were in default and were included in notes receivable from participants as of December 31, 2010.

During the year ended December 31, 2009, there were 227 participants who were in default of their loans, four of which were active employees. Loans in the amount of \$1,060,326 were in default and were included in notes receivable from participants as of December 31, 2009.

Subsequent to a remedy period that provides for the repayment of defaulted loans, uncollectible defaulted loans are treated as taxable distributions from the Plan to the respective participants.

**(9) Transfers from Other Plans and Other Additions**

Transfers from other plans reflect the assumption by the Plan of entire benefit plans of companies acquired by Airgas.

**Table of Contents****AIRGAS, INC. 401(k) PLAN**

Notes to the Financial Statements (Continued)

**(10) Differences between Financial Statements and Form 5500**

The following is a reconciliation of net assets available for benefits per the financial statements to the Plan's Form 5500:

	<b>2010</b>	<b>2009</b>
Net assets available for benefits per the financial statements	\$ 530,319,952	\$ 446,231,281
Deemed loan activity	(117,625)	(53,432)
Adjustment from contract value to fair value for fully benefit-responsive investment contracts	3,468,490	1,540,777
Net assets available for benefits per Form 5500	\$ 533,670,817	\$ 447,718,626

The following is a reconciliation of net additions per the financial statements to the Plan's Form 5500:

	<b>2010</b>	<b>2009</b>
Net additions per the financial statements	\$ 84,088,671	\$ 88,821,329
Change in deemed loan activity	(64,193)	(25,363)
Refunds due to participants		(1,911)
Change in adjustment from contract value to fair value for fully benefit-responsive investment contracts	1,927,713	1,540,777
Net income per Form 5500	\$ 85,952,191	\$ 90,334,832

**Table of Contents****AIRGAS, INC. 401(k) PLAN**

Schedule H, Line 4i Schedule of Assets (Held at End of Year)

December 31, 2010

<b>Identity of Issue</b>	<b>Description of Investment</b>	<b>Current Value</b>
* Airgas Common Stock Fund	Company Stock Fund	\$ 94,785,451
* Vanguard 500 Index Fund Investor Shares	Registered Investment Company	42,782,578
* Vanguard Explorer Fund Investor Shares	Registered Investment Company	27,424,455
* Vanguard International Growth Fund Investor Shares	Registered Investment Company	30,173,165
* Vanguard LifeStrategy Conservative Growth Fund	Registered Investment Company	50,490,461
* Vanguard LifeStrategy Growth Fund	Registered Investment Company	26,066,848
* Vanguard LifeStrategy Income Fund	Registered Investment Company	7,721,598
* Vanguard LifeStrategy Moderate Growth Fund	Registered Investment Company	23,544,877
* Vanguard Morgan Growth Fund Investor Shares	Registered Investment Company	7,173,744
* Vanguard Total Bond Market Index Fund Investor Shares	Registered Investment Company	31,327,417
* Vanguard U.S. Growth Fund Investor Shares	Registered Investment Company	26,966,630
* Vanguard Wellington Fund Investor Shares	Registered Investment Company	49,398,962
* Vanguard Windsor II Fund Investor Shares	Registered Investment Company	7,895,864
* Vanguard Prime Money Market Fund	Registered Investment Company	72,548
* Vanguard Retirement Savings Trust**	Common Collective Trust	84,613,168
* Participant Loans	Interest ranging from 5% to 11%, maturing through August 2040	17,860,376
<b>Total</b>		<b>\$ 528,298,142</b>

\* Party-in-interest

\*\* Contract value

See accompanying Report of Independent Registered Public Accounting Firm.

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SIGNATURES

Pursuant to the requirements of the Securities Exchange Act of 1934, the Plan Administrator has duly caused this annual report to be signed on its behalf by the undersigned hereunto duly authorized.

AIRGAS, INC. 401(k) PLAN  
(Name of Plan)

BY: /s/ Robert M. McLaughlin  
Robert M. McLaughlin  
Senior Vice President and

Chief Financial Officer

BY: /s/ Dwight T. Wilson  
Dwight T. Wilson  
Senior Vice President - Human Resources

DATED: June 27, 2011