COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF ENERGY & ENVIRONMENTAL AFFAIRS
DEPARTMENT OF ENVIRONMENTAL PROTECTION
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Commissioner

September 5, 2008

Attn: Seth Baruch
Climate Change Capital
818 Aspen Street, NW
Washington, DC 20012

Re: 310 CMR 7.00 Appendix B(7)
Transmittal # W200881
Conditional Approval of
BWP AQ 27 Application
Certification of GHG Credits
at Meridian Magnesium Products of
America in Eaton Rapids, MI

Dear Mr. Baruch:

The Massachusetts Department of Environmental Protection hereby approves, with conditions, your Application for Certification of GHG (Greenhouse Gas) Credits (BWP AQ 27), dated January 25, 2008. In accordance with the requirements of 310 CMR 7.00: Appendix B(7)(f), the Department conducted a 30-day public comment period on the proposed approval and considered all comments received. The public comment period ended on August 15, 2008.

The conditional approval of your Application for Certification of GHG Credits (BWP AQ 27) creates 1,138,334 Certified GHG Credits for emission reductions that are expected to occur, or have occurred, between February 1, 2008 and December 31, 2012. These credits have been deposited into MA GHG Credit account MAGHG-N-10007; the GHG Credit Account Representative for this account is Seth Baruch. The serial numbers of the credits are 10,090,688 through 11,229,022. Certified GHG Credits from this project can only be used by affected facilities for compliance with the CO_2 emissions standards of 310 CMR 7.29, or exchanged for CO_2 allowances in accordance with 310 CMR 7.00: Appendix B(7)(h), after subsequent verification by the Department. Verification applications are subject to the same public comment process as certification applications. Multiple verification applications may be submitted, provided that no more than two verification applications are submitted per year and the total number of verified GHG Credits created does not exceed the number of certified GHG credits

Included as part of this proposed conditional approval of your application for certification of GHG Credits are the following:

(1) A description of your project.
(2) A table showing the number of GHG Credits certified, by year.
(3) A list of relevant determinations that the Department has made in accordance with the requirements of 310 CMR 7.00: Appendix B(7).

(4) An explanation of how the number of GHG Credits proposed for certification was calculated.
(5) An explanation of how GHG Credits will be verified, including a proposed calculation methodology and any other conditions that the Department has placed on this Application for Certification of GHG Credits.

Note that your application is also incorporated, by reference, into this proposed approval.

(1) Description of the Project

The applicant proposes to create GHG Credits for reductions in sulfur hexafluoride (SF_6) emissions resulting from the substitution of other gases at Meridian Magnesium Products of America in Eaton Rapids, MI. According to the application:

> *As part of the process of recycling magnesium and casting magnesium products, SF_6 is used as a cover gas to prevent the magnesium from reacting with the air. This project involves converting from SF_6 to alternative cover gases (Novec-612 and dilute SO_2) that has no global warming potential therefore resulting in a substantial reduction in SF_6 emissions to the atmosphere.*

(2) Table showing the number of Certified GHG Credits.
Note that MassDEP is not certifying anticipated reductions beyond 2012, the deadline by which emissions must be reduced, avoided, or sequestered to be eligible for exchange for CO_2 allowances in accordance with 310 CMR Appendix B(7)(h).

Year	Certified GHG Credits
2008 (February – December)	189,102
2009	237,308
2010	237,308
2011	237,308
2012	237,308
Total	**1,138,334**

(3) A list of relevant determinations that the Department has made in accordance with the requirements of 310 CMR 7.00: Appendix B(7). (Defined terms and language that is directly excerpted from regulations appear in italics.)

The Department has made the following determinations:

- The emission reductions are expected to be *Real*, in that emissions of sulfur hexafluoride will actually decrease at Meridian Magnesium Products of America in Eaton Rapids, MI because of the project.

- The emission reductions are expected to be *Additional*, in that there is no legal requirement for Meridian Magnesium Products of America to reduce emissions of sulfur hexafluoride.
- The emission reductions are expected to be *Verifiable*, in that calculations will be based on actual data collected from calibrated scales and other direct measurements. Furthermore, an independent third-party verifier will verify data submitted in the verification process.
- The emission reductions are expected to be *Permanent*, in that once a particular process is completed at a particular time on a particular sample of magnesium without the use of SF_6 as a cover gas, the same process will never be completed on the same sample of magnesium at that time with SF_6 as a cover gas.
- The emission reductions are expected to be *Enforceable*, in that, pursuant to 310 CMR 7.00: Appendix B(7)(g)8., violations of the requirements of 310 CMR 7.00: Appendix B(7) may be enforced against any person who applied for certification or verification of GHG Credits, an affected facility that purchases GHG Credits created by this project, or any combination thereof.
- The project commenced *on or after January 1, 2006,* in accordance with 310 CMR 7.00: Appendix B(7)(d)9., in that, prior to 2008, SF_6 was used as a cover gas at Meridian Magnesium Products.
- The project is expected to *generate an annual average over the period applied for of 20,000 or more tons* CO_{2e}, in accordance with 310 CMR 7.00: Appendix B(7)(e)3., in that the project is expected to create approximately 237,000 GHG Credits each year.
- The application includes *a proposed method for determining, monitoring and assuring compliance,* in accordance with 310 CMR 7.00: Appendix B(7)(e)4.b., as described in section (5) of this document.
- The application specifies *the best management practice used to determine an emissions baseline,* in accordance with 310 CMR 7.00: Appendix B(7)(e)4.d., in that it is not unusual to use SF_6 as a cover gas at facilities that process magnesium. According to the application:

> *The Meridian process has already been optimized to minimize* SF_6 *consumption, so this is included in the baseline. According to Meridian, optimization improvements have reduced "*SF_6 *intensity" by an estimated 80%.*
>
> *For example, pulse timers were installed to reduce* SF_6 *flow when machines are not running at capacity. These pulse timers, for example, turn off* SF_6 *delivery for 15 seconds each minute when the machines are running at full steam. When the machines are not running as much, the cycling goes from 45 seconds off, 15 seconds on.*
>
> *In addition, the flow meters have been orificed, which reduces the potential of* SF_6 *leakage. With these and other measures, the use of* SF_6 *has been much more efficient.*

As part of its voluntary ISO14001 targets, SF_6 use in its US plant was reduced by 80% -- from 28 bottles per month to 8. As a result, there was virtually no room left for optimization improvements. The current baseline emissions (conservative calculation) represents these already-implemented improvements.

The Applicant should be aware that the Application for Verification of GHG Credits (BWP AQ 28), which must be approved before GHG Credits can be used for compliance or exchanged, requires applicants to specify a best management practice baseline that reflects practices at similar facilities during the verification period. Because best management practices may change over time, the emissions baseline against which reductions are calculated for verification purposes may not be the same baseline that is approved in the context of this Application for Certification of GHG Credits. In particular, MassDEP is aware of an EPA sponsored program to eliminate emissions from this type of facility in 2010 and a recently enacted ban on the use of SF_6 at facilities of this type in Europe. Therefore, when evaluating applications to verify reductions that occur on or after January 1, 2010, MassDEP will consider the results of this program, and any other relevant information, to determine the appropriate baseline for use in the verification process. The method by which best management practices will be incorporated into calculations is described in section (5) of this document. [1]

- The project does not present any potential project leakage.

(4) Explanation of how the number of GHG Credits proposed for certification was calculated

The annual number of GHG Credits proposed for certification was calculated using the following equation:

Certified GHG Credits = $N_{baseline} - N_{project}$

Where:

$N_{baseline}$ = the annual number of tons of SF_6 anticipated to be emitted without the project during the certification period if best management practices are followed.

$N_{baseline} = (D + R) \times 0.50 \times 22{,}800 \times 0.95$

Where:

D = the number of tons of SF_6 used in die casting 28,692 tons of magnesium during the baseline year;

R = the number of tons of SF_6 used in recycling 21,600 tons of magnesium during the baseline year;

[1] MassDEP is allowing the use of a rate-based emissions baseline based on actual historical emissions for reductions that occur on or before December 31, 2009 to provide certainty to the applicant regarding the number of credits that will be created during the first year of operation of the project, and because best management practice is unlikely to change significantly before December 31, 2009. MassDEP will require the applicant to re-specify best management practice for later time periods because of the possibility that best management practice may change, and because of the regulatory requirement that "where applicable, the applicant shall specify the best management practice used to determine an emissions baseline." If the applicant demonstrates that best management practice has not changed significantly for any time period after December 31, 2009, then theDepartment may allow the applicant to continue to use the baseline approved for 2008 and 2009.

0.50 = an adjustment factor representing the fact that some of the SF_6 used during the baseline period was not emitted because it was destroyed or consumed in the production process;

22,800 is the global warming potential of SF_6, as published by the Intergovernmental Panel on Climate Change (IPCC) at the time of submittal of the certification application; and,

0.95 = an adjustment factor representing uncertainty (as proposed by the applicant).

And:

$N_{project}$ = the annual number of tons of CO_{2e} anticipated to be emitted by the project.

$N_{project}$ = G * 2,830

G = the annual number of tons of the alternative cover gas Novec-612 anticipated to be used after the project is completed; and,

2,830 = the weighted average global warming potential of gases that are emitted when Novec-612 is used for magnesium production.

Data and calculations for this application are summarized in the following table:

	Certification (AQ27)
D	5.50
R	17.49
G	4.125
$N_{baseline}$	248,981.7
$N_{project}$	11673.75
Annual GHG Credits	**237,308**

(5) An explanation of how GHG Credits will be verified, including a proposed calculation methodology and any other conditions that the Department has placed on this Application for Certification of GHG Credits.

This Application for Certification of GHG Credits is being proposed for approval subject to the following two conditions:

To protect against double counting of carbon benefits, prior to approving each Application for Verification of GHG Credits (BWP AQ 28) for this project, MassDEP intends to require the applicant to submit "Certification of Transfer of Carbon Benefits" forms from any and all of the following entities: 3M Innovative Properties Companies and Magnesium Products

of America. Certification of Transfer of Carbon Benefits forms are available at http://www.mass.gov/dep/air/approvals/aqforms.htm#trading.

Each Application for Verification of GHG Credits (BWP AQ 28) associated with this project shall utilize the following equation to calculate the number of GHG Credits. All necessary data shall be submitted in a format that allows MassDEP to determine, monitor, and assure compliance with all relevant provisions of 310 CMR 7.00: Appendix B(7). Furthermore, significant data such as the amount of magnesium produced, and data necessary to determine emissions from the project, shall be verified by an independent third-party verifier.

GHG Credits = $N_{baseline} - N_{project}$

Where $N_{baseline}$ = the annual number of tons of SF_6 that would be emitted without the project if best management practices were followed.

$N_{baseline} = (D \times E + R \times F) \times 22{,}800$

Where:

D = the number of tons of magnesium manufactured through die casting during the verification period;

E = an emissions factor equal to the number of tons of SF_6 per ton of magnesium processed that would have been emitted from die casting operations if best management practices had been followed during the verification period. For reductions that occur on or before December 31, 2009 this emissions factor shall be equal to 0.0000910533 tons of SF_6 per ton of magnesium, which is the number of tons SF_6 emitted for each ton of magnesium manufactured during the baseline period, adjusted by a factor of 0.95 * 0.50 as shown in section (4) of this document. For reductions that occur on or after January 1, 2010, this baseline emissions factor shall be no greater than 0.0000910533 tons of SF_6 per ton of magnesium, and may be adjusted downward to reflect best management practice during the verification period. If the project constitutes best management practice during the verification period, then E shall be equal to zero and no GHG Credits shall be created from die casting operations;

R = the number of tons of magnesium manufactured through recycling during the verification period;

F = an emissions factor equal to the number of tons of SF_6 that would have been emitted per ton of magnesium processed in recycling operations if best management practices had been followed during the verification period. For reductions that occur on or before December 31, 2009, this emissions factor shall be equal to 0.000384618 tons of SF_6 per ton of magnesium, which is the number of tons SF_6 emitted for each ton of magnesium manufactured during the baseline period, adjusted by a factor of 0.95 * 0.50 as shown in section (4) of this document. For reductions that occur on or after January 1, 2010, this baseline emissions factor shall be no greater than 0.000384618 tons of SF_6 per ton of magnesium, and may be adjusted downward to reflect best management practice during the verification period. If the project constitutes best management practice

during the verification period, then F shall be equal to zero and no GHG Credits shall be created from recycling operations; and,

22,800 is the global warming potential of SF_6.

And,

$N_{project}$ = the actual number of tons of CO_{2e} emitted by the project during the verification period. Project emissions shall include, but not be limited to, emissions associated with the use of Novec-612 or any other alternative cover gas, and any emissions of carbon dioxide. Calculations shall take into account ongoing research into emissions that result from the use of alternative cover gases in magnesium production, and be adjusted to account for differing global warming potentials of various gases emitted by the project.

Should you have any questions concerning this CONDITIONAL APPROVAL, please contact Stacy DeGabriele at stacy.h.degabriele@state.ma.us or (617) 292-5610.

Very truly yours,

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Nancy L. Seidman
Deputy Assistant Commissioner
Climate Strategies
Bureau of Waste Prevention

cc: William Lamkin, DEP, BWP, NERO
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