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July 15, 2009

Attn: Kevin James
Climate Change Capital
1331 L Street, NW, Suite 212
Washington, DC 20012

Re: 310 CMR 7.00 Appendix B(7)
Transmittal # X227190
Final Approval of
BWP AQ 28 Application
Verification of GHG Credits
at Meridian Magnesium Products of
America in Eaton Rapids, MI

Dear Mr. James:

The Massachusetts Department of Environmental Protection (MassDEP or the Department) hereby approves your Application for Verification of Greenhouse Gas (GHG) Credits (BWP AQ28), dated March 27, 2009. 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. The public comment period ended on June 29, 2009. No public comments were received during the comment period.

Final Approval of your March 27, 2009 Application for Verification of GHG Credits (BWP AQ 28) creates 31,386 verified GHG Credits for emission reductions that occurred between February 1, 2008 and December 31, 2008 at Meridian Magnesium Products of America in Eaton Rapids, MI. These credits have been deposited into MA GHG Credit account MAGHG-N-10007; the GHG Credit Account Representative for this account is Kevin James. Verified GHG Credits from this project can be used by affected facilities for compliance with the carbon dioxide (CO₂) emissions standards of 310 CMR 7.29, or exchanged for CO₂ allowances in accordance with 310 CMR 7.00: Appendix B(7)(h).

Included as part of this Final Approval of your March 27, 2009 Application for Verification of GHG Credits is the following:

- (1) A description of your project.
- (2) A table showing the number of GHG Credits Certified and Verified for this project.
- (3) A list of relevant determinations that the Department has made in accordance with the requirements of 310 CMR 7.00: Appendix B(7).

This information is available in alternate format. Call Donald M. Gomes, ADA Coordinator at 617-556-1057. TDD# 1-866-539-7622 or 1-617-574-6868.

MassDEP on the World Wide Web: <http://www.mass.gov/dep>

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(4) An explanation of how the number of Verified GHG Credits was calculated.

Note that your application is also incorporated, by reference, in this Final Approval.

(1) Description of the Project

The applicant is creating verified GHG Credits for reductions in sulfur hexafluoride (SF₆) emissions resulting from the substitution of other gases at Meridian Magnesium Products of America in Eaton Rapids, MI. According to the certification application:

As part of the process of recycling magnesium and casting magnesium products, SF₆ is used as a cover gas to prevent the magnesium from reacting with the air. This project involves converting from SF₆ to alternative cover gases (Novec-612 and dilute SO₂)... therefore resulting in a substantial reduction in SF₆ emissions to the atmosphere.

A significantly lower number of GHG credits were proposed by the applicant for verification than were conditionally approved for certification in September 5, 2008. According to the verification application:

The certification application that was conditionally approved by MassDEP on September 5, 2008 indicated that SF₆ use as a cover gas would be completely eliminated in 2008 upon switching to Novec-612 in the die casting portion of the process, and advanced “dilute SO₂” melt protection technology in the recycling portion of process. While that is still the objective of the project going forward, there were technical and magnesium quality issues in 2008 which prevented the complete elimination of SF₆ use in both the die casting and recycling portions of Meridian’s operations.

Meridian encountered a number of technical difficulties with their seals on the melt furnace, which caused SO₂, the alternative cover gas, to leak out – potentially causing health risks. Consequently, Meridian had to use its redundant/ back-up melt protection technology – SF₆ in the melt furnace in 2008 to avoid unacceptable health risks. However, Meridian has since addressed the technical issues associated with the melt furnace and has reportedly reduced the need to use SF₆.

In addition, during the time period when Meridian encountered technical difficulties with the seals on the melt furnace, they received a shipment of magnesium that was of poor quality. This poor quality magnesium metal required a higher degree of melting and thus a greater use of SF₆.

(2) Table showing number of GHG Credits

	Time Period	Number of Credits	Status
Certified GHG Credits	February 1, 2008 through December 31, 2012	1,138,334	Conditional Approval September 5, 2008
Verified GHG Credits	February 1, 2008 through December 31, 2008	31,386	Final Approval July 15, 2009

(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 *Real*, in that emissions of sulfur hexafluoride actually decreased at Meridian Magnesium Products of America in Eaton Rapids, MI as a result of the project between February 1, 2008 and December 31, 2008.
- The emission reductions were *Additional*, in that, according to the applicant, there is no legal requirement for Meridian Magnesium Products of America in Eaton Rapids, MI to reduce emissions of sulfur hexafluoride between February 1, 2008 and December 31, 2008.
- The emission reductions are *Verifiable*, in that emission reductions were calculated based on actual data collected from calibrated scales and other direct measurements. Furthermore, an independent third-party verifier verified data submitted in the verification process.
- The emission reductions are *Permanent*, in that, once a particular process is completed at a particular time on a particular sample of magnesium without the use of SF₆ as a cover gas, the same process will never be completed on the same sample of magnesium at that time with SF₆ as a cover gas.
- The emission reductions are *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, SF₆ was used as the only cover gas at Meridian Magnesium Products.
- The applicant has specified *the best management practice (BMP) used to determine an emissions baseline*, in accordance with 310 CMR 7.00: Appendix B(7)(e)4.d. The March 27, 2009 Application for Verification of GHG Credits included the methodology described in section (5) of the September 5, 2008 Final Conditional

Approval for Certification of GHG Credits. This methodology includes an emissions factor equal to the number of tons of SF₆ per ton of magnesium processed that would have been emitted from die casting and recycling operations if best management practices had been followed during the verification period.

- The project does not present any potential project leakage.

(4) Explanation of how the number of Verified GHG Credits was calculated

The number of GHG Credits was calculated using the following equation in accordance with MassDEP's September 5, 2008 Final Conditional Approval letter that created the Certified GHG Credits:

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

Where:

N_{baseline} = the number of tons of SF₆ that would be emitted without the project during the verification period if best management practices were followed.

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

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 SF₆ per ton of magnesium processed that was emitted from die casting operations following best management practices during the verification period. This emissions factor is equal to 0.0000910533 tons of SF₆ per ton of magnesium, which is the number of tons SF₆ 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 the September 5, 2008 Final Conditional Approval letter;

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 SF₆ that was emitted per ton of magnesium processed in recycling operations following best management practices during the verification period. This emissions factor is equal to 0.000384618 tons of SF₆ per ton of magnesium, which is the number of tons SF₆ 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 the September 5, 2008 Final Conditional Approval letter; and,

22,800 is the global warming potential of SF₆.

And,

N_{project} = the actual number of tons of CO_{2e} emitted by the project during the verification period as reported by the applicant. As stated in the September 5, 2008 Final Conditional

Approval of the certification application “Project emissions include, but are not limited to, emissions associated with the use of Novec-612 or any other alternative cover gas, and any emissions of carbon dioxide. Calculations take into account ongoing research into emissions that result from the use of alternative cover gases in magnesium production, and are adjusted to account for differing global warming potentials of various gases emitted by the project.” The applicant reported that unanticipated technical and metal quality issues resulted in the continued use of significant amounts of SF₆ during the verification period. Associated greenhouse gas emissions are included in this variable. The applicant also reported emissions of Novec-612, as anticipated at the time that the certification application was approved.

$$N_{\text{project}} = 17,253 + 106,421$$

Where:

17,253 = the actual number of tons of CO₂e emissions resulting from the use of SF₆ and Novec-612 in die casting during the verification period, adjusted to account for the global warming potentials of SF₆ and Novec-612.

106,421 = the actual number of tons of CO₂e emissions resulting from the use of SF₆ and Novec-612 in recycling during the verification period adjusted to account for the global warming potentials of SF₆ and Novec-612.

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

	Verification (AQ28)
D	26,346
R	11,445
N _{baseline}	155,059
N _{project}	123,674
GHG Credits	31,386

Should you have any questions concerning this FINAL APPROVAL, please contact Stacy DeGabriele at stacy.h.degabriele@state.ma.us or (617) 292-5864.

Very truly yours,

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

cc: William Lamkin, DEP, BWP, NERO
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