Section 3
Findings and Conclusions

3.1 Hazardous Waste Report

The facility was not required to prepare a hazardous waste report since the facility did not identify any hazardous waste as having been generated in 2011 and, therefore, was understood to be classified as a non-generator during the 2011 calendar year.

3.2 SARA 312 Tier II Form

Based on the information provided by Brunk regarding on-site quantities of materials for which MSDSs are maintained, no tradename materials were identified in excess of the 10,000 pound reporting threshold. Consideration of particular "tradename" types of hazardous chemicals are discussed in the Sections 3.2.1 through 3.2.3, while "constituents" (viewed as components of hazardous chemical mixtures) are discussed in Section 3.2.4.

3.2.1 Tool Steels

For the 2006 reporting year, the maximum on-site amount of *Tool Steels, High Speed Steels, Specialty Strip Steel...* was reportedly 40,000 pounds. However, this information was apparently overly conservative based on a July 17, 2006, conversation with Brunk's Tooling Manager, Mr. Jim Stech. According to Mr. Stech, tools steels are ordered on a job-specific basis, as opposed to maintaining a significant inventory on site. As such, the amount of tool steels in inventory is more accurately about 1,000 pounds at any given time. Of this amount, Mr. Stech estimates that on the order of 100 pounds is actually in process (*i.e.*, machining operations) at any given time.

Section 311(e) of Title III excludes any substance present as a solid in any manufactured item to the extent that exposure to the substance does not occur under normal conditions of use. It is assumed that exposure to the tool steels (and the constituents contained therein) under normal conditions of use is limited to approximately 100 pounds, which is actually being machined at any given time. The balance of the tool steels (*i.e.*, that which is not being machined) is assumed to be excluded from consideration under Section 311(e) of Title III. Since approximately 100 pounds of tool steels are actually in process at any given time, the amount of tool steels to which exposure may occur under normal conditions of use is less than the 10,000 pound reporting threshold and, therefore, is not deemed to be reportable for the purposes of SARA 312.

3.2.2 Tumbling Media

For previous reporting years, the amount of *All Standard Tumbling Media Formulations* was identified as being present on site at any given time in excess of 10,000 pounds; however, in 2011, the amount present on site was not provided by Brunk. This material includes various sizes and types ceramic cylinders that are manufactured for use as tumbling media. The type of media used and the wear rate of the surfaces of the media depends on the nature of the job being run. The efficacy of the media diminishes as its surfaces wear; therefore, they are generally replaced when the surfaces are sufficiently worn.

The tumbling media is formed to a specific shape or design during manufacture and has end use functions dependent upon its shape or design during end use. According to Mr. Ken Tollas (formerly of Brunk), approximately 12,000 pounds (maximum) of the total on-site amount is in storage at any given time; therefore, no releases are expected from this portion of material while stored. The stored portion of the material is not expected to pose a physical hazard or health risk to employees. Consequently, Brunk maintains that the stored portion of this material meets the article exemption criteria under 29 CFR 1910.1200(b).

Under normal conditions of use, exposure to this material would be limited to approximately 4,000 pounds of the material that would be in process (*i.e.*, in the tumblers) at any given time. Since this quantity is less than 10,000 pounds, this material is not deemed to be subject to reporting under SARA 312.

3.2.3 Industrial Batteries

Industrial batteries are used on-site, which are considered both to be hazardous chemicals and to contain an EHS – namely, sulfuric acid (CAS No. 7664-93-9). Brunk reviewed and updated its inventory of batteries, which is provided in Appendix B. Of the seven batteries identified, four are understood to be *consumer products* (*e.g.*, standard car battery that can be purchased by the general public), which are exempt from SARA 311/312 requirements per 29 CFR 1910.1200(b)(vii). The last three batteries are industrial batteries, including one General Battery Corporation (GBC) Model 125G-13 battery and two Storage Battery Systems (SBS) Model 18-125FR-13 battery. In the absence of specific information regarding the weight and sulfuric acid content of the GBC battery, it was assumed that the model number more completely corresponded to a model 18-125-13 36V battery, for which GBC data[6] indicates a sulfuric acid content of 172.31 pounds, and a total battery mass of 2,110 pounds. According to SBS[7], the Model 18-125-FR-13 battery

[6] *GBC Battery Specifications, Hazardous Material Content* manufacturer spreadsheet.
[7] Per a conversation between Mr. Joe Liello (TRC) and "Scott" of SBS Battery (262-703-5800) on 05-14-09.

contains 156.8 pounds of sulfuric acid and weighs 2,160 pounds. Based on this information, the total mass of non-exempt batteries is approximately 6,430 pounds, which is less than the 10,000 pound reporting threshold. Moreover, at approximately 486 pounds the amount of sulfuric acid contained in the batteries is less than its reporting threshold – *i.e.*, the lesser of 500 pounds or its TPQ of 1,000 pounds.

3.2.4 Assessment of Individual Constituents

In addition to evaluating tradename materials with on-site quantities in excess of 10,000 pounds, facility-wide quantities of constituents contained in the tradename materials were evaluated. Based on the results of the gross threshold analysis contained in Appendix B, no constituents were identified in excess of corresponding SARA 312 reporting thresholds.

3.3 Air Emission Inventory

A gross threshold analysis (see Appendix C) was performed to identify NR 438 regulated air pollutants that would have the potential to exceed corresponding reporting thresholds if all of the chemical contained in a tradename material were to be emitted to the atmosphere. Such an analysis is conservatively intended to identify regulated pollutants that may be of concern based on tradename compositional information and, as such, warrant further review to determine if they may actually be reportable. The results of this analysis identified the following:

1. **Various Metals:** Various metals (*e.g.*, Tin Plate, Hot/Cold Rolled Steel Sheet/Strip, etc.) are processed (*e.g.*, stamping/pressing, surface grinding) to form various metal parts. Each of which is a mixture of various constituents, of which the following were identified as having the potential to exceed corresponding NR 438 reporting thresholds if all that was processed was emitted to the ambient atmosphere (as opposed to being formed into product):
   - iron oxide (CAS No. 1309-37-1);
   - vanadium pentoxide (CAS No. 1314-62-1);
   - manganese (CAS No. 7439-96-5);
   - molybdenum (CAS No. 7439-98-7);
   - nickel (CAS No. 7440-02-0);
   - tantalum (CAS No. 7440-25-7);
   - tungsten (CAS No. 7440-33-7);
   - beryllium (CAS No. 7440-41-7);
   - chromium (CAS No. 7440-47-3);
   - cobalt (CAS No. 7440-48-4); and

- copper (CAS No. 7440-50-8).

However, the only particulate-based emissions that are anticipated as a result of processing the various metals are as indoor fugitive particulate emissions associated with various machining operations – all of which are vented inside the building. As particulate-based emissions, such emissions that are not otherwise captured and collected in particulate control devices are generally anticipated to settle-out inside the building. Consequently, they are not considered to be reportable for the current reporting year.

2. **Cobalt (CAS No. 7440-48-4):** In addition to being a constituent of various metals that are processed on site, cobalt is also an ingredient in carbides that are used on site. In contrast to the metals that are processed (discussed under Item 1, above), the carbides are used in support of manufacturing the final product and, as such, are not incorporated into the product itself. Deterioration of the carbides as by grinding and cutting can result in the airborne particulate. However, as discussed under Item 1, the surface grinding and cutting operations that are anticipated to use carbides are generally vented to dust collectors that vent inside the building. As there are no stack-vented processes that vent outside the building, which use carbides, any particulate-based emissions that may result that are not otherwise captured and collected by particulate control devices are generally anticipated to settle-out inside the building. Consequently, cobalt is not considered to be reportable for the current reporting year.

NOTE: Some metallic constituents noted above are anticipated to be emitted from natural gas combustion operations based on published emission factors (AP-42). Such emission estimates, summarized in Appendix C, were below respective NR 438 reporting thresholds for the 2011 reporting year.

3. **Phosphorus (CAS No. 7723-14-0):** Phosphorus is present as a solid constituent of various metals (*e.g.*, Carbon Valve Steel, Hot Rolled Steel). Following the logic outlined above under Item 1 ('Various Metals'), the only particulate-based emissions that are anticipated as a result of processing the various metals are as indoor fugitive particulate emissions associated with various machining operations – all of which are vented inside the building. As particulate-based emissions, such emissions that are not otherwise captured and collected in particulate control devices are generally anticipated to settle-out inside the building. Consequently, they are not considered to be reportable for the current reporting year.

In addition to the gross threshold analysis, emissions of gaseous pollutants (*e.g.*, VOC, natural gas combustion emissions) were also calculated based on the information provided by Brunk. The calculated VOC emissions were approximately 933 pounds, which was below the corresponding NR 438 reporting threshold of 6,000 pounds for the 2011 reporting year. The process-specific VOC emissions are summarized in the following table.

ID	Process	VOC Emissions	
		lbs/yr	TPY
B20	Natural Gas Combustion	14	0.007
P12	Cold Degreasers	296	0.15
P13	Press Operations	531	0.27
P14	Misc. VOC Containing Materials	92	0.05
	Total	**933**	**0.47**

As with the 2006 reporting year, emissions were below the reporting threshold; therefore, an NR 438 report was not required to be prepared and submitted to the WDNR for the 2011 reporting year. In regard to the 2006 reporting year, Mr. Ted Cauwels (WDNR) was contacted regarding such a determination by Mr. Joe C. Liello (formerly of RMT) on March 15, 2007. To document this determination, a follow-up e-mail was sent to Ted by Joe on March 15, 2007. In response, Ted forwarded the e-mail on to Mr. Ralph Patterson (WDNR) requesting that Brunk be recorded as having been exempt from NR 438 reporting requirements for the 2006 reporting year. A similar notification was submitted to Mr. Cauwels on March 17, 2008. In response, Mr. Cauwels stated in an e-mail that with 3 consecutive years of consistently being below the NR 438 reporting thresholds, and given that emissions have decreased in each successive year that future notifications (regarding exempt status) would not be required. A copy of this e-mail is provided in Appendix C.

3.4 SARA 313 Reporting

The SARA 313 reports contained in Appendix D were completed using data provided by Brunk. The documentation of calculations is contained in Appendix D. The raw material usage data and MSDSs provided by Brunk were used by TRC to determine which chemicals required reporting under SARA 313 for the 2011 reporting year. The chemicals determined to meet the threshold reporting levels for 2011 and included in the SARA 313 Form R reports are as follows:

Chemical	CAS No.	Type of Use	Threshold (lbs/yr)	Amount (lbs/yr)	Est. Release Qty. (lbs/yr)	Est. Recycle Qty.* (lbs/yr)
Chromium	7440-47-3	Processed	25,000	375,631	470	108,980
Copper	7440-50-8	Processed	25,000	89,357	40	25,925
Manganese	7439-96-5	Processed	25,000	155,011	58	44,972
Nickel	7440-02-0	Processed	25,000	494,280	21	143,402

** Includes scrap metal that is sent offsite for direct reuse, as well as dust that is not directly reused. Only the dust fraction is reported on the SARA 313 reports.*

The primary materials that contributed to these threshold analysis results are the metals that are processed onsite. As discussed below, some materials, such as metals that are machined, may be considered to be "articles". Chemicals regulated under SARA 313 that are contained in

"articles" that are processed or otherwise used are exempt from threshold determinations, and release and other waste management calculations. For a SARA 313 chemical in an item to be exempt as part of the article, the item must be a manufactured item that meets all of the following criteria: 1) is formed to a specific shape or design during manufacture; 2) has end use functions dependent in whole or in part upon its shape or design during end use; and 3) does not release a toxic chemical under normal conditions of processing or use of the item at the facility.

If, in the course of processing or use, an item retains its initial thickness or diameter, in whole or in part, then it meets the first criteria. Regarding the third criteria, if the processing or otherwise use of all like items results in a total release of 0.5 pound or less of a SARA 313 regulated chemical in a calendar year, then the release can be rounded to zero, and the items retain their article status. The 0.5 pound threshold does not apply to each individual article, but applies to the sum of all releases from processing or otherwise use of all like articles.

The various processing operations to which metal (containing SARA 313 regulated chemicals) may be subjected need to be assessed to determine if the metal processed satisfies the criteria to be considered as an "article." Any metal processed that does not meet the "article" criteria, must be included in threshold determinations to assess the applicability of SARA 313 reporting requirements.

As indicated in the tabulated summary above, since the releases of each of the listed SARA 313 regulated chemicals from various machining operations exceeded 0.5 pounds, the article exemption criteria are not fully satisfied. Consequently, the metals were not considered to be articles and, therefore, were included in the threshold determination, and in release and other waste management calculations.