THE EFFECT OF IMPORTS OF ALUMINUM ON THE NATIONAL SECURITY

AN INVESTIGATION CONDUCTED UNDER SECTION 232 OF THE TRADE EXPANSION ACT OF 1962, AS AMENDED

U.S. Department of Commerce
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I. EXECUTIVE SUMMARY

A. Overview

This report summarizes the findings of an investigation conducted by the U.S. Department of Commerce (the "Department") pursuant to Section 232 of the Trade Expansion Act of 1962, as amended (19 U.S.C. §1862 ("Section 232")), into the effect of imports of aluminum on the national security of the United States.

In conducting this investigation, the Secretary of Commerce (the "Secretary") noted the Department's prior investigations under Section 232. This report incorporates the statutory analysis from the Department's 2001 Report[1] with respect to applying the terms "national defense" and "national security" in a manner that is consistent with the statute and legislative intent.[2] As in the 2001 Report, the Secretary in this investigation determined that "national security" for purposes of Section 232 includes the "general security and welfare of certain industries, beyond those necessary to satisfy national defense requirements, which are critical to minimum operations of the economy and government."[3]

As required by statute, the Secretary considered all factors set forth in Section 232(d). In particular, the Secretary examined the effect of imports on national security requirements, including: domestic production needed for projected national defense requirements; the capacity of domestic industries to meet such requirements; existing and anticipated availabilities of the human resources, products, raw materials, and other supplies and services essential to the national defense; the requirements of growth of such industries and such supplies and services including the investment, exploration, and development necessary to assure such growth; and the importation of goods in terms of their quantities, availabilities, character, and use as those affect such industries; and the capacity of the United States to meet national security requirements.

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[1] U.S. Department of Commerce, Bureau of Export Administration; *The Effect of Imports of Iron Ore and Semi-Finished Steel on the National Security*; Oct. 2001 ("2001 Report").

[2] *Id.* at 5.

[3] *Id.*

The Secretary also recognized the close relation of the economic welfare of the United States to its national security; the impact of foreign competition on the economic welfare of individual domestic industries; and any substantial unemployment, decrease in revenues of government, loss of skills, or any other serious effects resulting from the displacement of any domestic products by excessive imports, without excluding other factors, in determining whether a weakening of the U.S. economy by such imports threaten to impair national security. In particular, this report assesses whether aluminum is being imported "in such quantities" and "under such circumstances" as to "threaten to impair the national security."[4]

B. Findings

In conducting the investigation, the Secretary found:

(1) Aluminum is essential to U.S. national security. Aluminum is needed to satisfy requirements for:

a. *The U.S. Department of Defense* ("DoD") for maintaining effective military capabilities including armor plate for armored vehicles, aircraft structural parts and components, naval vessels, space and missile structural components, and propellants; and

b. *Critical Infrastructure Sectors* that are central to the essential operations of the U.S. economy and government, including power transmissions, transportation systems, manufacturing industries, construction, and others.

(2) The U.S. Government does not maintain any strategic stockpile of bauxite, alumina, aluminum ingots, billets or any semi-finished aluminum products such aluminum plate.

(3) The present quantity of imports adversely impacts the economic welfare of the U.S. aluminum industry.

a. Imports and global aluminum production overcapacity, caused in part by foreign government subsidies – particularly in China, have had a

[4] 19 U.S.C. § 1862(b)(3)(A).

substantial negative impact on the economic welfare and production capacity of the United States primary aluminum industry. The decline in U.S. production has occurred despite growing demand for aluminum both in the U.S. and abroad.

b. In 2016, the United States imported five times as much primary aluminum on a tonnage basis as it produced; the import penetration level was about 90 percent, up from 66 percent in 2012.

c. U.S. primary aluminum production in 2016 was about half of what it was in 2015, and output further declined in 2017. U.S. smelters are now producing at 43 percent of capacity and at annual rate of 785,000 metric tons. As recently as 2013, U.S. production was approximately 2 million metric tons per year.

d. Since 2012, six smelters with a combined 3,500 workers have been permanently shut down, totaling 1.13 million metric tons in lost production capacity per year.

e. The loss of jobs in the primary aluminum sector has been precipitous between 2013 and 2016, falling 58 percent from about 13,000 to 5,000 employees.

f. The U.S. currently has five smelters remaining, only two smelters that are operating at full capacity. Only one of these five smelters produces high-purity aluminum required for critical infrastructure and defense aerospace applications, including types of high performance armor plate and aircraft-grade aluminum products used in upgrading F-18, F-35, and C-17 aircraft. Should this one U.S. smelter close, the U.S. would be left without an adequate domestic supplier for key national security needs. The only other high-volume producers of high-purity aluminum are located in the UAE and China (internal use only).

g. The impact so far has been greatest on the primary (unwrought) aluminum sector. Now, however, the downstream aluminum sector also is threatened by overcapacity and surging imports.

h. Imports accounted for 64 percent of U.S. consumption of aluminum (primary and downstream mill products combined) in 2016.

i. U.S. imports in the aluminum categories subject to this investigation totaled 5.9 million metric tons in 2016, up 34 percent from 4.4 million metric tons in 2013. In the first 10 months of 2017, aluminum imports rose 18 percent above 2016 levels on a tonnage basis.

j. In the downstream aluminum sectors of bars, rods, plates, sheets, foil, wire, tubes and pipes, imports rose 33 percent from 1.2 million metric tons in 2013 to 1.6 million metric tons in 2016.

k. Overall in 2016, for the aluminum product categories covered by this investigation, the United States ran a trade deficit of $7.2 billion.

(4) Global excess aluminum capacity is a circumstance that contributes to the weakening of the U.S. aluminum industry and the U.S. economy.

a. A major cause of the recent decline in the U.S. aluminum industry is the rapid increase in production in China. Chinese overproduction suppressed global aluminum prices and flooded into world markets.

b. China's aluminum production is largely unresponsive to market forces. China produced approximately one million metric tons of excess supply in 2016. This excess alone exceeds the total U.S. 2016 production of primary aluminum of 840,000 metric tons.

c. China's industrial policies encourage development and domination of the entire aluminum production chain. These policies are further intended to stimulate the export of aluminum processed into sheets, plates, rods, bars, foils and other semi-manufactures and to target development of increasingly sophisticated and high-value product sectors such as automotive and aerospace.

d. China imposes an excise tax that creates a disincentive for the export of primary aluminum ingots and billets. It provides tax rebates on exports of semi-finished or finished aluminum products. Thus, U.S. imports of aluminum from China are not in the form of unwrought

aluminum, but primarily semi-finished downstream aluminum products.

e. As imports make further inroads into the higher value-added, more sophisticated downstream sectors, U.S. downstream companies supporting the defense sector will be increasingly impacted.

C. Conclusion

Based on these findings, the Secretary of Commerce has concluded that the present quantities and circumstance of aluminum imports are "weakening our internal economy" and threaten to impair the national security as defined in Section 232. The Department of Defense and critical domestic industries depend on large quantities of aluminum. But recent import trends have left the U.S. almost totally reliant on foreign producers of primary aluminum. The U.S. is also at risk of becoming completely reliant on foreign producers of high-purity aluminum that is essential for key military and commercial systems. The domestic aluminum industry is at risk of becoming unable to satisfy existing national security needs or respond to a national security emergency that requires a large increase in domestic production. These risks and long-run industry trends "threaten to impair the national security" as defined by Section 232.

The Secretary has determined that to remove the threat of impairment, it is necessary to reduce imports to a level that will provide the opportunity for U.S. primary aluminum producers to restart idled capacity. This will increase and stabilize U.S. production of aluminum at the minimal level needed to meet current and future national security needs. If no action is taken, the United States is in danger of losing the capability to smelt primary aluminum altogether.

The imposition of a quota or tariff on downstream products also is necessary because global overcapacity, coupled with industrial policies that promote exports of downstream products, have had a negative impact on the U.S. primary aluminum industry through reduced demand for inputs from downstream companies, as well as directly on the downstream companies that face increased import penetration in many aluminum product sectors.

D. Recommendation

Due to the threat, as defined in Section 232, to national security from the quantities and circumstances of aluminum imports, the Secretary recommends that the President take immediate action by adjusting the level of these imports. Under alternatives 1 and 2, the quotas or tariffs would be designed, even after any exemptions (if granted), to enable U.S. aluminum production to utilize an average of 80 percent of production capacity. The quotas and tariffs described below should be sufficient to enable U.S. aluminum producers to operate profitably under current market prices for aluminum and will allow them to reopen idled capacity (*see* Table 1).

Table 1 - Import Levels and U.S. Primary Aluminum Capacity Utilization Rates*

Primary Aluminum Market Snapshot (thousands of metric tons)	**2013-2016 Average**	**2017 Annualized**
Total Demand for Primary Aluminum in U.S. (production+imports-exports)	**4,681**	**5,516**
U.S. Annual Capacity	**2,195**	**1,818**
U.S. Annual Production (liquid)	**1,518**	**785**
Capacity Utilization Rate (percentage)	**69%**	**39%**
Imports and Exports (millions of metric tons)		
Imports of Primary Aluminum to U.S.	**3,536**	**5,046**
Exports of Primary Aluminum from the U.S.	**373**	**315**
Percent Import Penetration	**76%**	**91%**
Production at Various Utilization Rates (thousands of metric tons)		
Maximum Capacity	**2,195**	**1,818**
Production at 75% Capacity Utilization	**1,646**	**1,364**
Production at 80% Capacity Utilization	**1,756**	**1,454**
Production at 85% Capacity Utilization	**1,866**	**1,545**
Import Levels and Domestic Production Targets Based on 80% Capacity Utilization		
Partial Equilibrium (No Projected Reduction in Exports and Demand)		
Maximum Import Level (mmt)	**4,377**	
Estimated Import Penetration	**79%**	
Estimated Production (mmt)	**1,454**	
Alternative 1: Quota Applied to 2017 Import Levels	**86.7%**	
Alternative 1: Tariff Rate Applied to All Imports	**7.7%**	

*Numbers may differ slightly due to rounding.

Source: United States Department of Commerce, Bureau of the Census. Annualized Data based on 2017 year-to-date figures through October.

Two alternatives for achieving this object are described. In each alternative, quotas or tariffs would be imposed on imports of: 1) unwrought aluminum (Harmonized Tariff Schedule (HTS) Code 7601); 2) aluminum castings and forgings (HTS Codes 7616.99.51.60 and 7616.99.51.70); 3) aluminum plate, sheet, strip, and foil (flat rolled products) (HTS Codes 7606 and 7607); 4) aluminum wire (HTS Code 7605); 5) aluminum bars, rods and profiles (HTS Code 7604); and 6) aluminum tubes and pipes (HTS Code 7608); and 7) aluminum tube and pipe fittings (HTS Code 7609) based on 2017 annualized imports in those categories.

In either alternative, the Secretary recommends that the action taken to adjust the level of imports must be in effect for a duration sufficient to allow necessary time and assurances to stabilize the U.S. industry. It takes up to nine months to restart idled smelting capacity. Market certainty is needed to build cash flow to pay down debt and to raise capital for plant modernization to improve manufacturing efficiency.

The Department of Commerce, in consultation with other appropriate departments and agencies, will monitor the status of the U.S. aluminum industry and the effectiveness of the remedies to determine if the remedies should be terminated, extended, or adjusted as needed.

Alternative 1 – Global Quota or Tariff

Global Quota

A worldwide quota of 86.7 percent on imports described above would restrict aluminum imports sufficiently to allow U.S. primary aluminum producers to increase production by about 669,000 metric tons, bringing total production to about 1.45 million metric tons, or about 80 percent of U.S. primary aluminum production capacity. This quota would also be applied to the five other aluminum product categories listed above and would help ensure the viability of those U.S. producers to meet national security needs.

Global Tariff

A tariff rate of 7.7 percent on imports of unwrought aluminum and the other aluminum product categories listed above should have the same impact as the 86.7 percent quota. This tariff rate would be in addition to any antidumping or countervailing duty collections applicable to any product.

This tariff rate also will adequately adjust for the price distortions in downstream aluminum product sectors that are caused by global overcapacity and overproduction being exported in the form of downstream products.

Alternative 2 –Tariffs on a Subset of Countries

Tariffs on a Subset of Countries

A tariff rate of 23.6 percent on imports of aluminum products from China, Hong Kong, Russia, Venezuela, and Vietnam should also restrict aluminum imports sufficiently to allow U.S. aluminum producers to utilize an average of 80 percent of capacity. These five countries are the source of substantial imports due to significant overcapacity, and/or are potential unreliable suppliers or likely sources of transshipped aluminum from China.

As in Alternative 1 above, this tariff rate would be in addition to any antidumping or countervailing duty collections applicable to any product. (For targeted tariff, all other countries would be limited to 100 percent of their 2017 import volumes.)

Exemptions

In selecting an alternative, the President could determine that specific countries should be exempted from the proposed quota (by granting those specific countries 100 percent of their prior imports in 2017 or exempting them entirely), based on an overriding economic or security interest of the United States, which could include their willingness to work with the United States to address global excess capacity and other challenges facing the U.S. aluminum industry.

The Secretary recommends that any such determination should be made at the outset and a corresponding adjustment be made to the final quota or tariff imposed on the remaining countries. This would ensure that overall imports of

aluminum to the United States remain at or below the level needed to enable the domestic aluminum industry to return to 2012 production and import penetration levels.

Exclusions

The Secretary recommends an appeal process by which affected U.S. parties could seek an exclusion from the tariff or quota imposed. The Secretary would grant exclusions based on a demonstrated: (1) lack of sufficient U.S. production capacity of comparable products; or (2) specific national security-based considerations. This appeal process would include a public comment period on each exclusion request, and in general, would be completed within 90 days of a completed application being filed with the Secretary.

An exclusion may be granted for a period to be determined by the Secretary and may be terminated if the conditions that gave rise to the exclusion change. The U.S. Department of Commerce will lead the appeal process in coordination with the Department of Defense and other agencies as appropriate. Should exclusions be granted the Secretary would consider at the time whether the quota or tariff for the remaining products needs to be adjusted to ensure that U.S. aluminum production meets target levels.

II. LEGAL FRAMEWORK

A. Section 232 Requirements

Section 232 provides the Secretary with the authority to conduct investigations to determine the effect on the national security of the United States of imports of any article. It authorizes the Secretary to conduct an investigation if requested by the head of any department or agency, upon application of an interested party, or upon his own motion. *See* 19 U.S.C. § 1862(b)(1)(A).

Section 232 directs the Secretary to submit to the President a report with recommendations for "action or inaction under this section" and requires the Secretary to advise the President if any article "is being imported into the United States in such quantities or under such circumstances as to threaten to impair the national security." *See* 19 U.S.C. § 1862(b)(3)(A).

Section 232(d) directs the Secretary and the President to, in light of the requirements of national security and without excluding other relevant factors, give consideration to the domestic production needed for projected national defense requirements and the capacity of the United States to meet national security requirements. *See* 19 U.S.C. § 1862(d).

Section 232(d) also directs the Secretary and the President to "recognize the close relation of the economic welfare of the Nation to our national security, and …take into consideration the impact of foreign competition on the economic welfare of individual domestic industries" by examining whether any substantial unemployment, decrease in revenues of government, loss of skills or investment, or other serious effects resulting from the displacement of any domestic products by excessive imports,[5] or other factors, result in a "weakening of our internal economy" that threaten to impair the national security. *See* 19 U.S.C. § 1862(d).

[5] An investigation under Section 232 looks at excessive imports for their threat to the national security, rather than looking at unfair trade practices as in an antidumping investigation.

Once an investigation has been initiated, Section 232 mandates that the Secretary provide notice to the Secretary of Defense that such an investigation has been initiated. Section 232 also requires the Secretary to do the following:

(1) "Consult with the Secretary of Defense regarding the methodological and policy questions raised in [the] investigation;"

(2) "Seek information and advice from, and consult with, appropriate officers of the United States;" and

(3) "If it is appropriate and after reasonable notice, hold public hearings or otherwise afford interested parties an opportunity to present information and advice relevant to such investigation."[6] *See* 19 U.S.C. § 1862(b)(2)(A)(i)-(iii).

As detailed in Parts III and VI of this report, each of the legal requirements set forth above has been satisfied.

In conducting the investigation, Section 232 permits the Secretary to request that the Secretary of Defense provide an assessment of the defense requirements of the article that is the subject of the investigation. *See* 19 U.S.C. § 1862(b)(2)(B).

Upon completion of a Section 232 investigation, the Secretary is required to submit a report to the President no later than 270 days after the date on which the investigation was initiated. *See* 19 U.S.C. § 1862(b)(3)(A). The required report must:

(1) Set forth "the findings of such investigation with respect to the effect of the importation of such article in such quantities or under such circumstances upon the national security;"

(2) Set forth, "based on such findings, the recommendations of the Secretary for action or inaction under this section;" and

[6] Department regulations (i) set forth additional authority and specific procedures for such input from interested parties, *see* 15 C.F.R. §§ 705.7 and 705.8, and (ii) provide that the Secretary may vary or dispense with those procedures "in emergency situations, or when in the judgment of the Department, national security interests require it." Id., § 705.9.

(3) "If the Secretary finds that such article is being imported into the United States in such quantities or under such circumstances as to threaten to impair the national security . . . so advise the President." *See* 19 U.S.C. § 1862(b)(3)(A)

All unclassified and non-proprietary portions of the report submitted by the Secretary to the President must be published.

Within 90 days after receiving a report in which the Secretary finds that an article is being imported into the United States in such quantities or under such circumstances as to threaten to impair the national security, the President shall:

(1) "Determine whether the President concurs with the finding of the Secretary"; and

(2) "If the President concurs, determine the nature and duration of the action that, in the judgment of the President, must be taken to adjust the imports of the article and its derivatives so that such imports will not threaten to impair the national security." *See* 19 U.S.C. § 1862(c)(1)(A).

B. Discussion

While Section 232 does not contain a definition of "national security," both Section 232, and its implementing regulations at 15 C.F.R. Part 705, contain non-exclusive lists of factors that Commerce must consider in evaluating the effect of imports on national security.

Congress in Section 232 explicitly determined that "national security" includes, but is not limited to, "national defense" requirements. *See* 19 U.S.C. § 1862(d). The Department in 2001 determined that "national defense" includes both defense of the United States directly and the "ability to project military capabilities globally."[7]

[7] *Id.*

The Department also concluded in 2001 that "in addition to the satisfaction of national defense requirements, the term "national security" can be interpreted more broadly to include the general security and welfare of certain industries, beyond those necessary to satisfy national defense requirements, which are critical to the minimum operations of the economy and government." The Department called these "critical industries."[8] This report once again uses these reasonable interpretations of "national defense" and "national security." However, this report uses the more recent 16 critical infrastructure sectors identified in Presidential Policy Directive 21[9] instead of the 28 critical industry sectors used by the Bureau of Export Administration in the 2001 Report.[10]

Section 232 directs the Secretary to determine whether imports of any article are being made "in such quantities" or "under such circumstances" that those imports "threaten to impair the national security." *See* 19 U.S.C. § 1862(b)(3)(A). The statutory construction makes clear that either the quantities or the circumstances, standing alone, may be sufficient to support an affirmative finding. They may also be considered together, particularly where the circumstances act to prolong or magnify the impact of the quantities being imported.

The statute does not define a threshold for when "such quantities" of imports are sufficient to threaten to impair the national security, nor does it define the "circumstances" that might qualify.

Likewise, the statute does not require a finding that the quantities or circumstances are impairing the national security. Instead, the threshold question under Section 232 is whether those quantities or circumstances "threaten to impair the national security." *See* 19 U.S.C. § 1862(b)(3)(A). This formulation leaves the matter to the Secretary's discretion, and makes evident that Congress expected an affirmative finding under Section 232 would occur before there is actual impairment of the national security.

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[8] *Id.*

[9] Presidential Policy Directive 21; *Critical Infrastructure Security and Resilience*; February 12, 2013 ("PPD-21").

[10] *See Op. Cit.* at 16.

Section 232(d) contains a considerable list of factors for the Secretary to consider in determining if imports "threaten to impair the national security"[11] of the United States, and this list is mirrored in the implementing regulations. *See* 19 U.S.C. § 1862(d) and 15 C.F.R. § 705.4. Congress was careful to note twice in Section 232(d) that the list they provided, while mandatory, is not exclusive.[12] Congress' illustrative list is focused on the ability of the United States to maintain the domestic capacity to provide the articles in question as needed to maintain the national security of the United States.[13] Congress broke the list of factors into two equal parts using two separate sentences. The first sentence focuses directly on "national defense" requirements, thus making clear that "national defense" is a subset of the broader term "national security." The second sentence focuses on the broader economy, and expressly directs that the Secretary and the President "shall recognize the close relation of the economic welfare of the Nation to our national security."[14] *See* 19 U.S.C. § 1862(d).

Two of the factors listed in the second sentence of Section 232(d) are most relevant in this investigation. Both are directed at how "such quantities" of imports threaten to impair national security. *See* 19 U.S.C. § 1862(b)(3)(A). In administering Section 232, the Secretary and the President are required to "take into consideration the impact of foreign competition on the economic welfare of

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[11] 19 U.S.C. § 1862(b)(3)(A).

[12] *See* 19 U.S.C. § 1862(d) ("the Secretary and the President shall, in light of the requirements of national security and without excluding other relevant factors…" and "serious effects resulting from the displacement of any domestic products by excessive imports shall be considered, without excluding other factors…").

[13] This reading is supported by Congressional findings in other statutes. *See, e.g.,* 15 U.S.C. § 271(a)(1)("The future well-being of the United States economy depends on a strong manufacturing base…") and 50 U.S.C. § 4502(a)("Congress finds that – (1) the security of the United States is dependent on the ability of the domestic industrial base to supply materials and services… (2)(C) to provide for the protection and restoration of domestic critical infrastructure operations under emergency conditions… (3)… the national defense preparedness effort of the United States government requires – (C) the development of domestic productive capacity to meet – (ii) unique technological requirements… (7) much of the industrial capacity that is relied upon by the United States Government for military production and other national defense purposes is deeply and directly influenced by – (A) the overall competitiveness of the industrial economy of the United States; and (B) the ability of industries in the United States, in general, to produce internationally competitive products and operate profitably while maintaining adequate research and development to preserve competitiveness with respect to military and civilian production; and (8) the inability of industries in the United States, especially smaller subcontractors and suppliers, to provide vital parts and components and other materials would impair the ability to sustain the Armed Forces of the United States in combat for longer than a short period.").

[14] *Accord* 50 U.S.C. § 4502(a).

individual domestic industries" and any "serious effects resulting from the displacement of any domestic products by excessive imports" in "determining whether such weakening of our internal economy may impair the national security." *See* 19 U.S.C. § 1862(d).

Another factor, not on the list, that the Secretary found to be a relevant is the presence of massive foreign excess capacity for producing aluminum. This excess capacity results in aluminum imports occurring "under such circumstances" that that they threaten to impair the national security. *See* 19 U.S.C. § 1862(b)(3)(A). The circumstance of excess global aluminum production capacity is a factor because, while U.S. production capacity has declined dramatically in recent years, other nations have increased their production capacity, with China alone able to produce as much as the rest of the world combined. This overhang of excess capacity means that U.S. aluminum producers, for the foreseeable future, will face increasing competition from imported aluminum, often subsidized by foreign national governments, as other countries export more downstream products to the United States to bolster their own economic objectives and offset loss of markets to Chinese aluminum exports.

It is these three factors – displacement of domestic aluminum by excessive imports and the consequent adverse impact on the economic welfare of the domestic aluminum industry, along with global (primarily Chinese) excess capacity in aluminum– that the Secretary has concluded are "weakening…our internal economy" and therefore "threaten to impair" the national security as defined in Section 232.[15]

The Secretary also considered whether or not the source of the imports affects the analysis under Section 232. The Department has previously determined "imports can threaten to impair U.S. national security if the United States is excessively dependent on imports from unreliable or unsafe sources, and thereby is

[15] The 2001 Report used the phrase "fundamentally threaten to impair" when discussing how imports may threaten to impair national security. *See* 2001 Report at 7 and 37. Because the term "fundamentally" is not included in the statutory text and could be perceived as establishing a higher threshold, the Secretary expressly does not use the qualifier in this report. The statutory threshold in Section 232(b)(3)(A) is unambiguously "threaten to impair" and the Secretary adopts that threshold without qualification. 19 U.S.C. § 1862(b)(3)(A).

vulnerable to a supply disruption" for an input or article.[16] Such an analysis is permissible under the statutory command to consider whether articles are "being imported into the United States… under such circumstances as to threaten to impair the national security." *See* 19 U.S.C. § 1862(b)(3)(A). Such an inquiry would be necessary and appropriate in "such circumstances" where the United States is dependent on imports to meet national security needs, for example when a mineral is not produced in the United States or domestic producers are unable to meet demand but imports from an unreliable source are preventing investment needed to increase domestic production.

The source of imports could also be a "factor" the Secretary considers under the analysis required by Section 232(d). *See* 19 U.S.C. § 1862(d). That is up to the Secretary's discretion. However, because Congress in Section 232 chose to explicitly direct the Secretary to consider whether the "impact of foreign competition" and "the displacement of any domestic products by excessive imports" are "weakening our internal economy" yet made no reference whatsoever to an assessment of the sources of imports, it is evident that Congress recognized that those adverse impacts might well be caused by imports from allies or other reliable sources.[17] As a result, the fact that some or all of the imports causing the harm are from reliable sources does not compel a finding that those imports do not threaten to impair national security.

The statute allows the Secretary to reasonably conclude that, in the absence of adequate domestic supply, imports from allies should not be relied upon in order to ensure domestic production facilities are sufficient to meet U.S. national security as defined in Section 232. Similarly, the statute also permits the Secretary to

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[16] 2001 Report at 6. *See also*, 2001 Report at 7 (describing prior Department reports under Section 232 that considered supply vulnerability.

[17] When Congress adopted the text of section 232(d) in 1962 the immediately preceding section was Section 231, 19 U.S.C. § 1861, which required the President, as soon as practicable, to suspend most-favored-nation tariff treatment for imports from communist countries. Given the bipolar nature of the world at the time, the absence of a distinction between communist and non-communist countries in Section 232 suggests that Congress expected Section 232 would be applied to imports from all countries—including allies and other "reliable" sources.

consider the availability of reliable imports as a factor that supports a conclusion that imports are not threatening to impair U.S. national security.

III. INVESTIGATION PROCESS

A. Initiation of Investigation

On April 26, 2017, U.S. Secretary of Commerce Wilbur Ross initiated an investigation to determine the effect of imported aluminum on national security under Section 232 of the Trade Expansion Act of 1962, as amended (19 U.S.C. 1862).

Pursuant to Section 232, the Department notified the U.S. Department of Defense in an April 26, 2017 letter from Secretary Ross to Secretary James Mattis. On April 27, 2017, President Donald Trump signed a Presidential Memorandum directing Secretary Ross to proceed expeditiously in conducting his investigation and submit a report on his findings to the President.

B. Public Comment

On May 3, 2017, the Department invited interested parties to submit written comments, opinions, data, information, or advice relevant to the criteria listed in Section 705.4 of the National Security Industrial Base Regulations (15 C.F.R. § 705.4) as they affect the requirements of national security, including the following:

(a) Quantity of the articles subject to the investigation and other circumstances related to the importation of such articles;

(b) Domestic production capacity needed for these articles to meet projected national defense requirements;

(c) The capacity of domestic industries to meet projected national defense requirements;

(d) Existing and anticipated availability of human resources, products, raw materials, production equipment, facilities, and other supplies and services essential to the national defense;

(e) Growth requirements of domestic industries needed to meet national defense requirements and the supplies and services including the investment, exploration and development necessary to assure such growth;

(f) The impact of foreign competition on the economic welfare of any domestic industry essential to our national security;

(g) The displacement of any domestic products causing substantial unemployment, decrease in the revenues of government, loss of investment or specialized skills and productive capacity, or other serious effects;

(h) Relevant factors that are causing or will cause a weakening of our national economy; and

(i) Any other relevant factors. (*See* Federal Register, Vol. 82, No. 88, Tuesday, May 9, 2017.)

The public comment period ended on June 23, 2017. The Department received 91 written submissions concerning this investigation. These public comments are set forth in Appendix A.

C. Public Hearing

The Department held a public hearing to elicit further information concerning this investigation in Washington, DC on June 22, 2017. The Department heard testimony from 32 witnesses at the hearing. A transcript of the testimonies given at the Public Hearing is included in Appendix B.

D. Interagency Consultation

Pursuant to the requirements of Section 232, Commerce Secretary Ross notified Defense Secretary Mattis of this investigation on April 26, 2017. In addition, Department of Commerce staff consulted with their counterparts in the Department of Defense regarding methodological and policy questions that arose during the investigation.

The Department also consulted with other agencies of the U.S. Government with expertise and information regarding the aluminum industry, including the U.S. Geological Survey of the Department of the Interior and the U.S. International Trade Commission.[18]

[18] The U.S. International Trade Commission conducted an investigation at the request of the Committee on Ways and Means of the U.S. House of Representatives entitled "Aluminum: Competitive Conditions Affecting the U.S. Industry," Publication Number 4703, Investigation Number 332-557, June 2017. This report provided information useful and pertinent to this Section 232 investigation and is cited henceforth as "USITC Report."

IV. PRODUCT SCOPE OF THE INVESTIGATION

For this report, aluminum is defined at the Harmonized Tariff Schedule (HTS) 4-digit level. The HTS codes covered by this report are listed in Table 2. In addition, two HTS codes at the ten digit level are included, covering aluminum castings and forgings.

Table 2 - Harmonized Tariff Schedule For Aluminum Products	
HTS Code	**Description**
7601	Unwrought aluminum
7604	Aluminum bars, rods and profiles
7605	Aluminum wire
7606	Aluminum plates, sheets, and strip, of a thickness exceeding 0.2mm*
7607	Aluminum foil (whether or not printed, or backed with paper, paperboard, plastics or similar backing materials) of a thickness (excluding any backing) not exceeding 0.2mm
7608	Aluminum tubes and pipes
7609	Aluminum tube and pipe fittings
7616.99.51.60	Other articles of aluminum: castings
7616.99.51.70	Other articles of aluminum: forgings
*Note: This category includes can sheet for aluminum can packaging.	
Source: U.S. International Trade Commission	

The scope of this investigation does not include bauxite or alumina, which are feedstocks for production of primary (unwrought) aluminum. Also excluded from analysis are aluminum waste and scrap (HTS 7602) and aluminum powders and flakes (HTS 7603) as these represent different industrial sectors.

V. BACKGROUND ON THE ALUMINUM INDUSTRY

Aluminum is the most abundant naturally occurring metal in the earth's crust, and it is an essential element of modern life. Virtually every person in the United States, and indeed most of the world, uses aluminum every single day. More aluminum is consumed today than at any point in the 125-year history of the metal's commercial production. Lightweight, corrosion resistant, easily formed, highly conductive, highly reflective, durable and recyclable – aluminum is a highly useful material for manufacturers. It offers a wide range of options for product innovation and process improvements. Aluminum is critical to modern mobility, increasing sustainability, and the national economy.

Aluminum is used in a wide variety of applications, and global demand for it is expected to grow at an annual rate of 3.8 percent.[19] Transportation applications, including aircraft and automobiles, account for 40 percent of domestic consumption, followed by packaging with 20 percent, building construction with 15 percent, electrical with eight percent, and machinery with seven percent.[20] One of the factors driving increasing demand for aluminum is its ability to reduce weight, thereby improving energy efficiency.

Aluminum originates from bauxite, an ore typically found in the topsoil of various tropical and subtropical regions; the United States is not a significant source of bauxite as it cannot be economically extracted here. Once mined, aluminum within the bauxite ore is chemically extracted in a refinery into alumina, an aluminum oxide compound. In a second step, the alumina is smelted to produce pure aluminum metal.

The industry can be divided into three basic segments: upstream, downstream, and secondary. The **upstream segment** includes primary or "unwrought" aluminum production, in which aluminum is produced from raw materials. The products of the upstream industry segment are classified within HTS Code 7601.

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[19] The Aluminum Association

[20] U.S. Geological Survey, Mineral Commodity Series, January 2017

The majority of U.S. aluminum production today is based on recycled scrap, called **secondary production,** and is captured within HTS Code 7602. The United States is the world's leading producer of secondary unwrought aluminum, due to its long established aluminum recycling industry. Secondary production increased from 22 percent of aluminum production in 1980, to 64 percent of domestic production in 2016.[21] While aluminum produced through secondary production is an important feedstock for the U.S. aluminum industry, it is fundamentally a different industry sector and is not the focus of this report.

The processing of aluminum into semi-finished aluminum goods such as rods, bars, sheets, plates, castings, forgings and extrusions is the **downstream segment** of the industry. These aluminum products can be manufactured using primary aluminum, secondary aluminum, or a combination depending on the unique requirements or specifications. Aluminum products manufactured by the downstream segment of the industry are included in HTS Codes 7604, 7605, 7606, 7607, 7608, 7609, 7616.99.51.60 and 7616.99.51.70.

(*See* Appendix C for a more detailed description of the aluminum industry)

[21] Aluminum: The Element of Sustainability; The Aluminum Association, September 2011 and USGS Mineral Commodity Series.

VI. FINDINGS

A. Aluminum is Essential to U.S. National Security

Aluminum products are used widely across U.S. society in a range of consumer products, commercial applications, and industrial products. The supply of aluminum ingot, bar, rod, coils, sheet, cable and wire, and plate products is essential to the functioning of the U.S. economy, critical infrastructure, and the national defense. This lightweight, electrically conductive, corrosion resistant material has widespread uses in consumer goods, commercial products, and in many industrial applications.

From food packaging to advanced military aircraft, aluminum is a vital material used in industry and in infrastructure critical to U.S. economic growth. These sectors consume large quantities aluminum for new construction, production of aircraft, automobiles, bridges, building materials, heating and cooling systems, housing, power transmission cable, trucks and trailers and other applications.

A predictable supply of this versatile metal is required for the supply of many types of products and systems supporting U.S. government civilian and defense operations. For economic stability and to support national security requirements for U.S. critical infrastructure and the national defense, the United States needs domestic capability to produce both primary aluminum and semi-finished aluminum products.

Specifically, U.S. capability must be maintained for: 1) primary aluminum production, 2) processing of recycled aluminum into products, and 3) making bar and rod, plate and sheet, coils, extrusions, castings, forgings, pigments and powders, and other aluminum products. In 2016, imports of aluminum ingot and semi-finished aluminum products accounted for 64 percent of U.S. aluminum

consumption.[22] In 2016, the U.S. imported more than 90 percent of the primary aluminum it consumed.[23]

Total reliance on imports cannot provide an assured supply of aluminum to meet U.S. critical infrastructure and defense needs in a national emergency – as production facilities are vulnerable and supply lines are easily disrupted. A significant shortfall in the flow of imported aluminum to U.S. manufacturers could disrupt essential commercial production in the absence of a domestic supply base for aluminum. Moreover, the aluminum smelting and downstream aluminum products industry are critical to the minimum operations of the economy and government.

Critical infrastructure sectors where there is significant dependence on aluminum content include:

- *Defense Industrial Base*: Design, production, delivery, and maintenance of military weapons systems, subsystems, and components or parts to meet U.S. military requirements
- *Energy:* Electric power transmission and distribution (over 6,000 power plants)
- *Transportation:* Aircraft, automobiles, railroad freight cars, boats, ships, trains, trucks, trailers, wheels
- *Containers and Packaging:* Cabinets, cans, foils, storage bins, storage tanks
- *Construction:* Bridges, structural supports, conduit, piping, siding, doors, windows, wiring
- *Manufacturing:* Machinery, stampings, castings, forgings, product components, consumer goods, heating and cooling devices, and utility lighting fixtures

1. Aluminum is Required for U.S. National Defense

The U.S. Department of Defense (DoD) and its contractors use a small percentage of U.S. aluminum production. The DoD "Top Down" estimate of

[22] Based on Aluminum Association data.

[23] Based on U.S. Geological Survey data for the U.S. production and on U.S. Census data for exports and imports.

average annual demand for aluminum during peacetime is [redacted], or [redacted] percent of total U.S. demand.[24] Despite the low percentage of aluminum consumed directly by the DoD, a healthy, vibrant commercial aluminum industry (both primary and downstream) is critical to U.S. national security.

[redacted]

The following sections of the report describe the use of aluminum in U.S. military systems and in critical infrastructure.

Use of Aluminum in U.S. Military Systems

a. Ground Systems/Weapons

In the area of ground weapons, cold-rolled thick aluminum plate is an integral part of the structure of armored vehicles such as tanks, personnel carriers, and amphibious vehicles. Such plate is classified within Harmonized Tariff Schedule (HTS) 7606. In these applications, aluminum provides outstanding ballistic protection and excellent corrosion resistance. Aluminum bar

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[redacted]

25 [redacted]

and other extrusions (HTS 7604) are used in cage armor on a number of vehicles. Aluminum cage armor is approximately 50 percent lighter than steel cage armor.

The use of aluminum also allows the design of low-weight, reliable, and cost-efficient components for light-armored civilian and tactical vehicles, as well as for heavy constructions like military bridges. Using aluminum plate in place of steel also improves the agility and transportability of defense and rescue vehicles and systems (by air transport, for example) into areas of conflict or disaster.

Table 3 - U.S. Defense Ground/Weapon Systems Using Aluminum Systems Requiring Components Made of Plate, Sheet, Piping, Tubing, Castings and/or Forgings	
Armored Multi-Purpose Vehicle (AMPV)	Ground Vehicle Trailers: Aircraft Loading System, 105-mm Howitzer, Minuteman Missile Transporter, Nuclear Ordinance Trailer
Amphibious Assault Vehicle (AAV)	Ground Vehicle Components: Cross Braces, Forged Front Hubs, Gasoline Tanks, Radiators, Transmission Support Brackets, Wheel Discs, Wheels
Bradley Fighting Vehicle (BFV)	Bridges: Improved Float Bridge (Ribbon Bridge); Armored Vehicle Launch Bridge (AVLB); Aluminum Pneumatic Floating Bridge (M4T6)
Bradley M-1 Tank*	Javelin Anti-Tank Missile
Joint Light Tactical Vehicle (JLTV)	Patriot Advanced Capability – 3 (PAC-3)
Expeditionary Fast Transport (EPF)	M224 60 MM Mortar
M109A7 Paladin Artillery Vehicle (M1009)	Small Arms: Pistols, Rifles, Grenade Launchers
*Out of production, but the manufacture of spare parts using aluminum may continue.	
Source: The Aluminum Association, U.S. Dept. of Defense, assorted industrial publications	

b. Aircraft

Aluminum alloys are the predominant choice for the fuselage, wing, and supporting structures of many military aircraft. These types of products are classified within HTS 7606 (aluminum sheet) as well aluminum casting and forgings classified within HTS 7616.99.51. The use of aluminum has been key to the success of advanced aircraft over the decades, including planes such as the Lockheed SR-71 Blackbird, C-17 Globemaster, Boeing F-18 – and today, the F-35 Joint Strike Fighter.

Because of aluminum's light weight and excellent damage tolerance capability, it is used in a large number of aircraft applications: vertical stabilizers, horizontal stabilizers, plate for trailing edges, spars, ribs, fuselage frames, and air intake shells. A variety of aircraft-related systems, including bombs, decoy systems, and radar also require aluminum. The airframe of a military aircraft can be as much as 80 percent aluminum by weight. The military aircraft industry also demands high-strength aluminum products that can perform in harsh environments without cracking or outright failure.

Aluminum products used in military aircraft are often highly engineered to meet specific performance attributes to facilitate machining complex aircraft parts. Structural components of U.S. military aircraft may be made of cast or fabricated wrought aluminum (forged, machined and assembled parts) as well as rolled sheet products.

The supply of high-purity aluminum is critical to the production of high-performance aluminum alloys used in military aircraft and other applications. To meet aircraft component performance requirements, "Purity" and "High-purity" grades of aluminum must be used to enable the manufacture of aluminum materials with greater tensile strength, fracture toughness, improved high-temperature operating ability, and corrosion resistance.[28] These advanced aluminum materials are used not only in aircraft, but in space, naval, and ground vehicles as well. While the industry classifies aluminum by purity, U.S. government trade and industry statistics (such as Harmonized Tariff Schedule (HTS) and North American Industrial Classification (NAICS)) are not differentiated based on purity.

Aircraft deployed by the DoD are expected to continue to use significant amounts of aluminum, even as composite materials replace parts traditionally made of aluminum or titanium. At least 36 types of U.S. military aircraft and related systems that require aluminum parts are in service today. These aircraft are purchased and used by the U.S. Government and foreign governments. In

[28] High-Purity aluminum grades are: P0406,P0405, P0404, P0305, P0304, P0303, and P0202. Source: Arconic, Century Aluminum, Harbor Aluminum, other industry sources. The average purity level of primary aluminum produced is 99.9 percent, compared to standard-purity aluminum which is approximately 99.7 percent.

addition, there are 19 other military aircraft systems for which spare aluminum parts continue to be required or may be required (*See* Table 4).

Table 4 - Department of Defense Aircraft Systems Using Aluminum Systems Requiring Components Made of Plate, Sheet, Piping, Tubing, Castings and/or Forgings	
A-10/AO-10 Thunderbolt*	Northrop F-5 Fighter*
AE2100 – Engine*	F-100*Super Sabre
AH-1 Super Cobra Helicopter	F-110*
AH-64 Apache Helicopter	F-117*
ALE-50 Towed Decoy System	Grumman F-14 Tomcat*
Air and Missile Defense Radar (AMDR)	Boeing F-15 Eagle*
APS-137 Radar	General Dynamics F-16 Fighting Falcon
B-1 Bomber*	Boeing F/A-18 Super Hornet
B-2 Bomber*	Lockheed Martin F-22 Raptor
B-52 Bomber*	F-24-Ultra Raptor
C-5*	F-35 Joint Strike Fighter
C130J Super Hercules Cargo Plane	Bell UH-1 Iroquois Helicopter*
C-17 Globemaster Cargo Plane*	Bell OH-58 Kiowa Helicopter
C-27J Spartan Cargo Plane*	Sikorsky UH-60 Blackhawk Helicopter
Northrop Grumman E-2 Hawkeye*	S-70 Black Hawk Helicopter
E-2C Hawkeye*	Sikorsky S-92 Helicopter
E-2D Advanced Hawkeye	Sikorsky CH-53E Super Stallion
Boeing E-3A Sentry (AWAC)*	Sikorsky CH-53K King Stallion Helicopter
Boeing KC-46 Fueling Tanker	Boeing Vertol CH-46 Sea Knight
KC-135 Stratotanker*	Boeing Vertol CH-47 Chinook
KC-46A Pegasus Tanker	V-22
P-3 Orion*	MK 84 Bomb
P-8 Poseidon	LM2500 Gas Turbine
Boeing V-22 Osprey	PW200 Helicopter Engine*
Northrop Grumman EA-6B Prowler*	F-135* Afterburner Turbofan Engine
MQ-9 Reaper (Predator B)	F-414 General Electric Engine
Global Hawk	ETF40 Gas Turbine
EPF	Air and Missile Defense Radar (AMDR)
T-38 Trainer Aircraft*	APS-137 Radar
T-45 Goshawk Trainer Aircraft*	Multi-Spectral Targeting System (MTS)
T-45 Goshawk trainers	Long Range Discrimination Radar (LRDR)
TF-50*Trainer Aircraft	Modernized Target Acquisition Designation Sight/Pilot Night Vision Sensor (M-TADS
***Out of production, but the manufacture of spare parts using aluminum may continue.**	
Source: U.S. Department of Commerce/Bureau of Industry and Security, U.S. Department of Defense, industry web sites.	

The U.S. manufacturers of products based on aluminum require 250,000 metric tons of high-purity aluminum a year. Approximately 90 percent of this is for commercial aerospace and other applications. Ten percent is used to support the manufacture of defense-related products. The United States produced annually, until recently, 125,000 metric tons of high-purity aluminum (Grades P0404, P0303, P0202). The balance is imported, principally from the UAE, but also small quantities from Canada, New Zealand, and Russia.

Century Aluminum operates the only high-volume, pure aluminum smelter in the United States. Its Hawesville, Kentucky facility has demonstrated capability to produce at least 100,000 metric tons of high-purity aluminum a year (it manufactured 60,000 metric tons high-purity aluminum in 2016). Arconic currently has an annual capability to produce approximately [redacted] of high-purity aluminum using standard aluminum ingot in a fractionalization crystallization process. All of its production is for internal consumption for the manufacture of company products; it supplements its own production with imported high-purity aluminum (from the UAE).

Aluminum from Century's Hawesville smelter supplies the electrical conductor, remelt ingot, and high-purity ingot markets, as well as the defense and aerospace industries. A large portion of Hawesville's specially configured facility provides the high-conductivity metal required by this facility's largest customer, Southwire. This company is a major manufacturer of electrical wire (including power transmission conductor), cable, and other electrical products.

The actions of Century's customers are driven in part because of concerns about Century Aluminum's future financial viability. Century has been closing smelting facilities in response to reduced orders for aluminum product from traditional customers – a situation attributed to foreign government intervention in the aluminum industry with massive subsidies. This has produced a global aluminum supply glut and a collapse of world aluminum prices. In turn, it has driven up U.S. imports of aluminum, which have drastically reduced company production and income.

[redacted]

c. Space Applications

There is a history of extensive use of aluminum in space applications, including launch vehicles, space capsules, satellites, and missiles. Aluminum has been a preferred material because of it is light weight, able to withstand stress, heat reflectance, and has other properties.

For missile and space applications, aluminum has been the material used across a wide range of structures. Once again, its light weight and its ability to withstand the stresses that occur during launch and operation in space environments are why aluminum has been used on Apollo spacecraft, the Skylab, the space shuttles and the International Space Station, as well as in missiles.

Table 5 - Space Launch Vehicles Using Aluminum Systems Requiring Components Made of Plate, Sheet, Piping, Tubing, Castings and/or Forgings	
System	**Components**
United Launch Alliance - Atlas V [Boeing, Lockheed Martin]	Aluminum Fuel Tanks
United Launch Alliance - Delta IV Heavy [Boeing, Lockheed Martin]	Second Stage –Propellant Tank Dome, Isogrid ring forgings, Tank skirts Booster Tanks – Barrels, domes, skirts
SpaceX - Falcon 9	Capsule Pressure Vessel
SpaceX - Dragon	First Stage – Aluminum Lithium Tanks; Second Stage – Aluminum-Lithium Tube
Orbital Sciences - Minotaur	Interstage Structure
Orion Multi-Purpose Crew Vehicle	Crew Capsule Structure
Space Launch System - NASA Mars Mission	
Rocket Fuel Propellant	Aluminum Powder
Sources: Boeing, Lockheed Martin, Orbital Sciences, SpaceX, https://biz360tours.com/ula-delta-iv-afspc-6	

Aluminum alloys consistently exceed other metals in such areas as mechanical stability, dampening, thermal management and reduced weight. Powdered aluminum is also used as the key ingredient in primary propellant for solid rocket booster motors for tactical missiles and space-launch platforms. The reason for this is because it has a high volumetric energy density and is difficult to ignite accidentally.

d. Naval Applications

Military marine designers and naval engineers recognize that aluminum's low density, high strength, and corrosion resistance make it an advantageous material for some types of shipbuilding. Use of aluminum enhances ship speeds and enables operation in shallower water because of reduced draft. Increased fuel efficiency and higher cargo carrying capability also are enabled by vessel weight reductions achieved using aluminum.

The greatest use of aluminum in the U.S. Navy is with four classes of ships: Expeditionary Fast Transport, Joint High Speed Vessel, Littoral Combat Ship – Monohull and the Littoral Combat Ship – Tirmarian. Smaller quantities of aluminum will be required for the construction of smaller craft – e.g., Dauntless Patrol Boats and the High Speed Maneuverable Surface Target (HSMST) boat.

The HSMSTs will be used to support weapon systems testing and evaluation, and fleet training exercises.

Although the cost of aluminum material is higher than for steel, and more labor hours are required to build the structure for aluminum ships, for some types of vessels there is an overall cost savings due to the life-cycle benefits of aluminum's significantly lower weight.[30] The Navy's future fleet program anticipates the use of aluminum in new vessel platforms that are under development.

Table 6 - Department of Defense Naval Systems Using Aluminum Systems Requiring Components Made of Plate, Sheet, Piping, Tubing, Castings and/or Forgings	
Expeditionary Fast Transport (EPF)	Littoral Combat Ship (LCS) – Monohull
Joint High Speed Vessel (JHSV)	Littoral Combat Ship (LCS) – Trimarian
Dauntless Patrol Boats	High Speed Maneuverable Surface Target (HSMST)
Ship-To-Shore Connector (SSC)	Landing Craft, Air Cushion (LCAC)
Tomahawk Missile	Torpedoes (Mark 37,44,45,46,48)
Sources: U.S. Department of Defense, assorted industrial sources.	

e. Future DoD Aluminum Requirements

DoD projects that its requirements for defense products and systems using aluminum will grow in the years ahead. DoD estimates that annual consumption for just wrought aluminum plate used in nine defense systems will climb from [redacted] in 2017 to more than [redacted] tons in 2020.

Much of this increase for wrought aluminum plate is attributed to orders for the Joint Light Tactical Vehicle (JLTV), Armored Multi-Purpose Vehicle (AMPV), M109 Paladin Artillery Vehicle, and the Amphibious Assault Vehicle (AAV), and the Littoral Combat Ship. Aluminum also is required for foreign military sales of Bradley Fighting Vehicles. These DoD aluminum projections do not include

[30] Lamb, Thomas, Nathaniel Beavers, Thomas Ingram and Anton Schmieman, "The Benefits and Costs Impact of Aluminum Naval Ship Structure," accessed through sname.org.

aluminum consumed for the production of spare parts for more than 70 Army, Air Force, and Navy systems in use by DoD.

In addition, ongoing research focused on improving sheet aluminum performance characteristics as well as casting and forging technology for aircraft and other defense application could result in greater use in DoD platforms. Indeed, R&D is expected to drive expanded use of the material – raising overall DoD tonnage requirements for production of defense systems.

Yet the pace of expansion of aluminum use in defense and commercial markets may be slower than it might be were it not for the collapse of aluminum prices and loss of revenue at U.S. aluminum producers. At this time most aluminum companies cannot afford to fund research. The importance of research in this industry is clear, however. More than 90 percent of all alloys currently used in the aerospace industry were developed through Alcoa's research.[31]

Retention of domestic capacity to meet DoD production requirements for conventional aluminum plate, armor plate, and other aluminum production capacity is of concern to DoD. DoD does not keep any type of aluminum product, including armor plate, in the U.S. Government's national stockpile.[32]

With U.S. commercial applications accounting for 90 percent of high performance aluminum consumption, limited commercial stockpiles located in the United States are not likely to be sufficient to support DoD aluminum requirements in a time of a major war. The ability to ship aluminum products across the ocean could be severely restricted, if not impossible.

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[31] Alcoa, http://www.alcoa.com/global/en/home.asp

[32] In June 1966, the National Defense Stockpile contained 920,000 short tons of aluminum. Over time, the Congress steadily reduced the stockpile's aluminum holding to zero. The purpose of the stockpile is to limit, if not preclude dependence by the United States upon foreign sources in times of a national emergency. U.S. Department of Defense requirements for aluminum in the stockpile have been reduced as a consequence of demand/supply modelling by the Institute for Defense Analysis. The accuracy of the modelling can be affected by assumptions on the duration and intensity of conflicts, capability to import materials in a time of war, expansion and contraction of the supplier base, and other factors. Sources: Congressional Record; Managing Materials for a Twenty-First Century Military (2008), The National Academies Press.

As of June 2017, there were approximately 295,000 metric tons of primary and alloy aluminum held in U.S. warehouses operated by the London Metals Exchange (LME). Based on 2016 U.S. consumption of 5.1 million metric tons, the amount of aluminum held in LME warehouses in Baltimore, Detroit, and New Orleans represents three weeks of domestic industrial demand.[33]

[redacted]

U.S. national security cannot be assured if the United States becomes entirely dependent on foreign suppliers for primary aluminum and high-purity aluminum. The U.S. in 2016 relied on imports for 89 percent of its primary aluminum requirements, up from 64 percent in 2012.[35] Canada, which is highly integrated with the U.S. defense industrial base and considered a reliable supplier, is the leading source of imports. With Canadian smelters operating at near full capacity and with the vast majority of their production already going to customers in the United States, there is limited ability for Canada to replace other suppliers.

In the future there is no assurance that some non-U.S. suppliers such as Russia (the largest supplier of primary aluminum to the U.S. after Canada) will provide all the necessary aluminum products on a timely basis and in the quantities requested, particularly in a time of war or national emergency. Shifts in the

[33] Sources: U.S. Department of Interior/USGS, U.S. Department of Commerce/BIS, and industry data sources.

[34] Kaiser Aluminum.

[35] Calculations were based on U.S. production of 840,000 metric tons, imports of 4.26 million metric tons, and U.S. exports of 303,000 metric tons of primary aluminum (HTS 7601).

policies of the governments of offshore aluminum suppliers, many of them state-owned, could leave the United States stranded.

2. Aluminum is Required for U.S. Critical Infrastructure

The Department of Homeland Security has designated 16 critical infrastructure sectors in the United States, which are considered so vital that their incapacitation or destruction would have a debilitating effect on defense capability, national economic security, national public health or safety.[36] Virtually all of these sectors rely on aluminum products as a part of their principal missions.

Specifically, these sectors include chemical production, commercial facilities, communications, critical manufacturing, dams, defense industrial base, emergency services, energy, food and agriculture, government facilities, transportation systems, and water management and waste water systems. No significant uses were identified for financial services and nuclear reactors and related waste management. Detailed information on the use and importance of aluminum in the various critical infrastructure sectors is described below.

Use of Aluminum in Critical Infrastructure Sectors

Of particular importance to U.S. critical infrastructure are core manufacturing activities such as primary metals manufacturing, including aluminum production and processing.[37] The manufacture and supply of primary aluminum (HTS 7601), secondary production (HTS 7602), bars, rods, (HTS 7604) plate, and sheet material (HTS 7606) are key to the creation of aluminum-based products employed across the U.S. economy (*see* Table 7).

Although aluminum use for electrical applications accounted for approximately seven percent of total U.S. aluminum consumption in 2016 (or about 836,000 metric tons),[38] its importance to critical infrastructure cannot be overstated. Aluminum transmission cables (contained in HTS classification 7605)

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[36] https://www.dhs.gov/critical-infrastructure-sectors

[37] https://www.dhs.gov/critical-manufacturing-sector#

[38] Aluminum Association, "Fast Facts at Glance – 2016," December 2017

power the nation, delivering electricity from power-generation facilities across-long-haul transmission grids for distribution at the regional, state, and local level.

The health of the U.S. economy hinges on functioning power transmission systems and the timely supply of reliable, durable aluminum cable for use by electric utilities. Predictable supply is especially important for recovery from storms and other natural disasters. Commercial office buildings also use large amounts of aluminum cable; and it is widely used as the primary service feed to residential power meters and breaker boxes.

The sector consuming the largest amount of aluminum is transportation. The manufacture of aircraft, automobiles, buses, freight and subway cars, boats and ships, tractor trailers, and related components accounted for about 35 percent (about 4.2 million metric tons) of U.S. aluminum consumption in 2016, according to the Aluminum Association.

The ready availability of high quality aluminum bar, rod, coils, plate, sheet, and extrusions is critical to the ability of manufacturers to deliver product to their customers in a timely way and to respond to national emergencies. For this reason, Boeing purchases [redacted] percent of the aluminum it uses for the manufacture of aircraft from suppliers in the United States.[39]

The agriculture and food supply industries are another of the Department of Homeland Security's (DHS) 16 critical infrastructure sectors. This industry relies heavily on the availability of aluminum packaging, including canning materials and foils (HTS 7607). Aluminum containers and packaging accounted for about 18 percent of U.S. aluminum consumption in 2016 (about 2.2 million metric tons). Aluminum is also widely used in crop irrigation piping in fields.

Building and construction, according to the Aluminum Association, was the third-largest major market for aluminum products in 2016, accounting for about 12 percent of total U.S. consumption (about 1.5 million metric tons). Aluminum is used for structural supports; door, wall, and door framing; roofs and awnings; architectural trim; utility cabinets; air conditioning systems; drawbridges and

[39]Source: Provided to the U.S. Department of Commerce/BIS by The Boeing Company.

portable emergency bridges; and many other applications. Many of these applications of aluminum are classified in HTS 7604 and HTS 7608.

Table 7 - DHS Critical Infrastructure Sectors – Use of Aluminum		
Sectors		**Aluminum End Uses**
1	Chemicals	Product ingredients (small amounts)
2	Commercial Facilities	Structural Components, Architectural Trim, Doors, Window Frames, Aluminum Wiring
3	Communications	Antenna Towers, Antennas, Electronics Cabinets, Satellites, Circuit Boards, Connectors
4	Critical Manufacturing	Primary Aluminum Production, Semi-Finished: Extrusions, Bars, Rods, Coil, Plate, Sheet, Tube, Pipe Production
5	Dams	Aluminum Water Conduits, Drainage Systems
6	Defense Industrial Base	Aircraft, Ground Vehicles, Boats, Bridges, Ships, Missiles, Assorted Weapons Systems
7	Emergency Services	Portable Bridges, Fire Engines, Ambulances, Gurneys
8	Energy	Power Transmission, Commercial Wiring, Liquid Natural Gas Storage Tanks
9	Financial Services	----------
10	Food and Agriculture	Packaging, Irrigation, Green Houses, Storage Buildings
11	Government Facilities	Federal Research Laboratories, DoD Repair Depots, Y-12
12	Health Care/Public Health	Walkers, Wheel Chairs, Splints, Packaging
13	Information Technology	Electronic Cabinets, Capacitors, Heat Sinks
14	Nuclear Reactors, Materials, and Waste Sector	High voltage Power Transmission Cable
15	Transportation Systems	Aircraft, Automobile, Buses, Engines, Freight Cars, Subway Cars, Tractor Trailers, Trucks, Transmission Housings, Truck Tankers, Boats, Ships
16	Water and Waste Water Systems	Temporary Piping, Cold Water Storage Tanks, Water Tankers
Note: Presidential Policy Directive (PPD-21) on Critical Infrastructure Security and Resilience, issued in February 2016, identified 16 industrial sectors. *See*: https://www.dhs.gov/critical-infrastructure-sectors.		
Source: U.S. Department of Commerce/Bureau of Industry and Security, The Aluminum Association, Association of Water Technologies, North American Freight Car Assn., Applied Aerospace Structures Corp., Society of Chemical Manufacturers and Affiliates		

Excessive reliance on offshore producers as the primary suppliers of aluminum ingot, semi-finished, and finished products to sustain systems for critical infrastructure would pose risks. The ability of the United States to respond to

national emergencies could be constrained by a lack of domestic production capability. Domestic inventories of aluminum products are often limited. Dependence on offshore manufacturers can hinder U.S. capabilities to respond to catastrophes and market surges.

B. Domestic Production of Aluminum is Essential to National Security

Continued access to U.S.-based aluminum production is important to critical infrastructure and to the nation's overall defense objectives as well as economic security. All segments of the U.S. aluminum industry contribute, directly or indirectly, to the U.S. defense industrial base as aluminum is used in a variety of defense applications. High-strength aluminum alloys have become among the most commonly used materials to make military aircraft; and aluminum armor plate is used to protect against explosives and other threats. A number of U.S. Navy ships are now made with aluminum.

The U.S. Department of Defense has a large and ongoing need for a range of aluminum products. These include:

- High-purity aluminum for the F-35 Joint Strike Fighter, the F-18, and the C-17.

- High-purity aluminum for the armor plate in military vehicles, littoral combat vessels, and missiles. The percentage of aluminum content in armor plate in military platforms is increasing and may reach as much as 60 percent in the next generation military vehicles.

- The U.S. Coast Guard employs aluminum-intensive 47-foot first-response lifeboats. The craft are self-bailing, self-righting and have a long cruising radius for their size.

Reliance on foreign suppliers for essential aluminum and aluminum products is contrary to U.S. national security. Moreover, overreliance on assumed future U.S. production capacity without adequate analysis given to the financial health and viability of the U.S. aluminum industrial base can lead to shortfalls in needed production, capabilities and related skilled work force when called upon.

To ensure U.S. national security response capability, the nation must have sufficient domestic aluminum production capacity to meet most commercial demand and to fulfill DoD contractor and critical infrastructure requirements. The economic stability of companies manufacturing aluminum in the United States is undermined by growing volumes of imported aluminum in key product sectors.

Although the United States imports large quantities of aluminum products from foreign suppliers, historically U.S. aluminum manufacturers have been industry leaders. Innovation by U.S. aluminum producers has provided technological and cost advantages to many domestic industries that use aluminum, including the aerospace, automotive, and defense sectors.

U.S. manufacturers have produced numerous high performance alloys to increase the strength, durability, performance of aluminum products. The wide-spread adoption of high-strength aluminum structural components and panels in automobiles, trucks, and aircraft are examples.

To maintain the health of advanced aerospace and defense product lines, the domestic industry must have a strong aluminum manufacturing capability and commercial product portfolio (e.g., automotive, industrial, packaging). Without a robust level of commercial business, aluminum manufacturers cannot afford to conduct research and development, make capital investments, nor maintain their production infrastructure, including that needed for making products for critical infrastructure and national defense.

C. Domestic Aluminum Production Capacity is Declining

1. Primary Aluminum Production Capacity

In 2016, global aluminum smelter capacity totaled 72.5 million metric tons, which was approximately two percent higher than the 2015 level.[40] The top six aluminum-producing countries accounted for nearly 77 percent of the world's total aluminum capacity, with China alone accounting for 55 percent of total global production capacity and 54 percent of global production. The United States'

[40] U.S. Geological Survey, Mineral Commodity Summary, January 2017

production capacity is ranked 6th in the world in 2016; in 2017 U.S. capacity has dwindled further.

During World War II, aluminum was considered so important to U.S. national security that the U.S. government embarked on a program to expand U.S. production capacity, which in 1940 was limited to one producer (Alcoa). Through the government-owned Defense Plant Corporation, the U.S. expanded primary aluminum production capacity by building new smelters to meet military demands. The government-owned plants were ultimately sold to U.S. corporations Kaiser Aluminum and Reynolds Aluminum in 1950.[41]

During the Korean War, the U.S. government sought to further expand U.S. primary aluminum capacity to meet military needs. This time, incentives were used including accelerated amortization (reducing or eliminating corporate taxes) and purchase contracts (in which the government purchased all unsold aluminum). Further expansion in U.S. production capacity took place in the 1960's, but during these years it was driven by increasing commercial demand.

U.S. primary aluminum production and capacity was relatively stable at between 3.5 million and 4 million metric tons per year from 1970 to 2000. Since 2000, there has been a steep decline in U.S. production. It corresponds with a large increase in U.S. imports of primary aluminum (*see* Figures 1 and 2 below).

One of the main reasons for the decline in U.S. primary aluminum production capacity is that the United States is a relatively high cost producer. Because aluminum production is highly energy intensive, the world's leading producers are generally the countries with the lowest energy costs (including Canada, Russia, the United Arab Emirates (UAE), and Bahrain). The exception is China, where electricity costs are actually higher than those of the United States ($614 per metric ton of aluminum produced in China versus $532 per metric ton in the United States); China' overall production costs were equal to that of U.S. producers.[42]

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[41] Routledge Revivals: The World Aluminum Industry in a Changing Energy Era, edited by Merton J. Peck, 2015.

[42] CRU Group, included US ITC Report, p. 110.

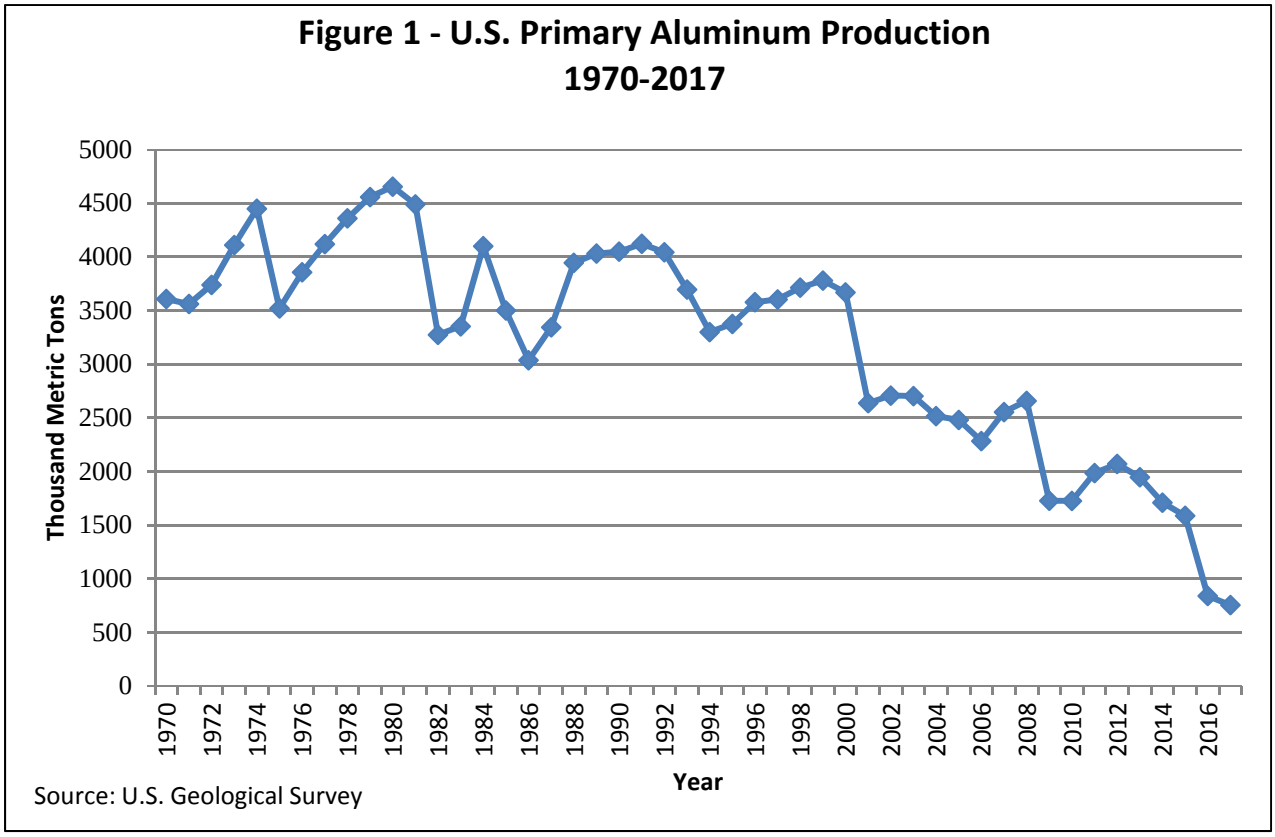
Figure 1 - U.S. Primary Aluminum Production
1970-2017
Thousand Metric Tons
5000
4500
4000
3500
3000
2500
2000
1500
1000
500
0
1970
1972
1974
1976
1978
1980
1982
1984
1986
1988
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012
2014
2016
Year
Source: U.S. Geological Survey

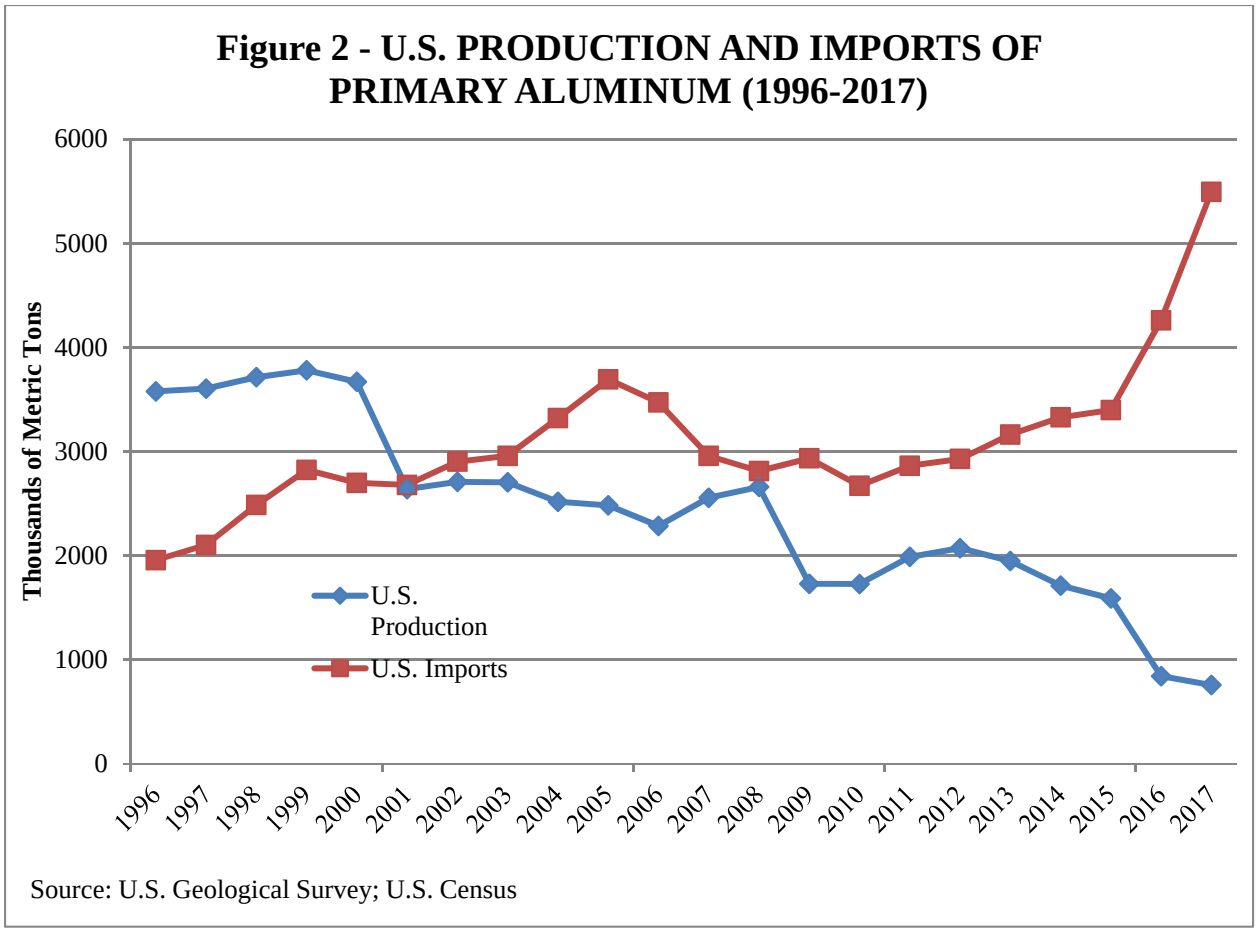

Table 8 - Global Aluminum Smelter Capacity and Production – 2016

Country	Production Metric Tons (000)	Capacity Metric Tons (000)	Capacity Utilization Rate
China	31,000	40,100	77%
Russia	3,580	4,180	85%
India	2,750	3,850	71%
Canada	3,250	3,270	99%
UAE	2,400	2,400	100%
United States	840	1,740	48%
All Other	13,780	16,790	82%
Total	**57,600**	**72,500**	**79% Average**

Source: U.S. Geological Survey, Mineral Commodity Summaries, January 2017

Total U.S. primary aluminum production capacity and actual production for the most recent five-year period is shown in Table 9 below. The decline in U.S. production and capacity utilization has been particularly dramatic in just the past two years, during which aluminum prices were at near record lows. The erosion of primary aluminum production capacity in the United States due to falling aluminum prices and subsequent closure of smelters has been precipitous.

In 1981, the U.S. produced 30 percent of the world's primary aluminum and it remained the world's largest producer until 2000, when there were 23 smelters in operation. In 2016, the U.S. accounted for just 1.5 percent of global production. In the same timeframe, production of primary aluminum in China grew from less than 15 percent of global production in 2000 to about 55 percent in 2016.

Table 9 - U.S. Primary Aluminum Production and Capacity

Year	Production Metric Tons (000)	Capacity Metric Tons (000)	Capacity Utilization Rate
2012	2,070	2,720	76%
2013	1,946	2,700	72%
2014	1,710	2,340	73%
2015	1,587	2,000	79%
2016	840	1,740	48%
2017 **(based on Jan-Nov)**	785	1,818*	39%

Source: U.S. Geological Survey Mineral Commodity Series; Mineral Industry Surveys, Companies
*In July, 2017 Alcoa announced that it would partially reopen its Warrick smelter in 2018 with 269,000 metric ton capacity; it had previously announced that this smelter was to be permanently shut down.;
In December, 2017 the company announced permanent closure of its Rockdale, TX smelter (idled since 2008)

Figure 3 – U.S. Primary Aluminum Production and Capacity

Source: U.S. Geological Survey

In 2017, there are only two aluminum (upstream) producers in the United States that operate smelters: Alcoa and Century Aluminum. A third company, Noranda, is in bankruptcy and its idled smelter was sold to ARG International AG of Switzerland. Table 10 below lists the status of aluminum smelting in the United States. At the beginning of 2016, three companies operated eight primary aluminum smelters in six U.S. states. In November, 2017, domestic smelters were operating at about 43 percent of capacity of about 1.8 million metric tons per year.[43]

[43] https://minerals.usgs.gov/minerals/pubs/commodity/aluminum/mcs-2017-alumi.pdf; companies

Table 10 - Current U.S. Smelter Production Capacity (As of November, 2017)					
Company	**Location**	**Capacity** (Metric Tons/Year)	**Current Operating Level** (Metric Tons/Year)	**Idle Aluminum Smelter Capacity** (Metric Tons/Year)	**Comments**
Alcoa	Ferndale, WA	279,000	230,000	49,000	Temporary shutdown of 79,000 tons in 3/2016
Alcoa	Wenatchee, WA	184,000	0	184,000	Temporary shutdown in 2/2016
Alcoa	Massena, NY (West)	130,000	130,000	0	Operating at full capacity
Alcoa	Evansville, IN "Warrick"	269,000	0	269,000	Shut down in 03/16; Expects to open 3 of 5 pot lines in 2018
Century	Hawesville, KY†	252,000	100,000	152,000	Pot line operations curtailed to 100,000 tons
Century	Sebree, KY	210,000	210,000	0	Operating at full capacity
Century	Mt. Holly, SC	229,000	115,000	114,000	Temporary shutdown of 114,000 tons in 2/2015
Magnitude 7 Metals (formerly Noranda)	New Madrid, MO	265,000	0	265,000	Temporary shutdown in 3/2016 - bought by ARG Int'l.* of Switzerland
Total		**1,818,000**	**785,000**	**1,033,000**	
	Average U.S. Smelter Facility Capacity Utilization in 2017 = 43.2%				

Notes: Although Alcoa announced in 2016 that its Warrick smelting operations in Evansville, Indiana would be permanently closed, in July 2017 it said that three of five pot lines would be restarted by the second quarter of 2018, providing 275 jobs.
†This smelter is capable of producing high-purity aluminum.
* ARG International of Switzerland renamed the New Madrid MO smelter Magnitude 7 Metals.

Source: U.S. Geological Survey; Aluminum Manufacturers

There are five smelters in the United States currently producing at some level, of which only two are operating at full production capacity. Three others are operating, but have reduced output levels below capacity by shutting down pot lines. During periods of weak demand or low aluminum prices, firms often shut down individual pot lines rather than run them at reduced capacity due to the 24/7 nature of primary smelting operations.

Industry leader Alcoa has just one fully operational smelter in the U.S.: Massena West (NY), with 130,000-ton-per-year capacity. It was saved from closure by $73 million in aid from New York State.[44] Alcoa's Ferndale, Washington smelter was also set to be temporarily shut down, but in April 2016 the company reached an agreement with the Bonneville Power Administration that enabled it to continue operations at a reduced level until early 2018.[45]

Although Alcoa announced in 2016 that its Warrick smelting operations in Evansville, Indiana would permanently close in July 2017 the company reversed that position announcing that three of five pot lines would be restarted by the second quarter of 2018, providing 275 jobs. Similarly, Century was close to idling one third of its Sebree, Kentucky smelter output in 2015, but made some organizational changes that enabled it to keep operating at full capacity.[46]

Two additional smelters are currently shut down, although no formal announcement of their permanent closure has been made: Alcoa's Wenatchee, WA and Magnitude 7 Metals' New Madrid, Missouri smelter (formerly Noranda). On October 28, 2016, ARG International AG of Switzerland completed the purchase of Noranda's idle smelter and renamed it Magnitude 7 Metals; the new owner is attempting to negotiate a power contract that will enable it to restart operations.[47]

Of the five smelters currently in operation at some level, only one is capable of producing high-purity aluminum needed for many advanced aerospace and defense applications: Century Aluminum's Hawesville, KY plant. Century attributes its production decline to Chinese overproduction of high-purity aluminum and associated increases in Chinese exports of aluminum products. This smelter is a major source of high-purity aluminum to product fabricators, including Constellium, and Kaiser. These companies use high-purity materials to produce

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[44] https://www.northcountrypublicradio.org/news/story/33518/20170306/massena-hopeful-as-alcoa-deadline-hits-two-year-mark

[45] http://www.bellinghamherald.com/news/local/article75151737.html

[46] https://www.platts.com/latest-news/metals/louisville-kentucky/century-aluminum-shelves-plans-to-shut-one-third-21631114

[47] Testimony of Bob Prusak, CEO of Magnitude 7 Metals, June 22, 2017.

aluminum products for DoD, including types of high-performance armor plate and aircraft-grade aluminum products used in upgrading F-18, F-35, and C-17 aircraft.

Aluminum Smelters Permanently Shut Down

Since 2012, six aluminum smelters have been permanently shut down, totaling 1.13 million metric tons of annual production capacity,[48] and about 3,500 jobs. Excluded from these statistics is Alcoa's Evansville, IN plant (currently the largest U.S. smelter in existence), which was closed "permanently" in the first quarter of 2016[49], but which Alcoa later announced would be partially reopening in 2018.

In addition, the reopening of Noranda's Missouri smelter (now Magnitude 7 Metals) is in doubt. If these smelters were to make their closures permanent, total lost U.S. annual smelting capacity since 2012 could reach 1.5 million metric tons, and a loss of over 4,000 jobs.

The closures of these facilities have had a significant impact on the local economies that relied on them for high quality jobs. Even temporary idling of plants threatens the U.S. industry as there are significant financial costs with re-opening an aluminum plant. According to industry experts, it takes six to nine months to restart aluminum production at an idled smelter or pot line. The longer the facility is idled, the more difficult it is to bring back the highly skilled workforce needed to operate the facility, adding additional costs for worker training and production delays.

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[48] U.S. Geological Survey, companies

[49] http://www.businessinsider.com/r-alcoa-plans-to-close-largest-us-aluminum-smelter-amid-tumbling-prices-2016-1

Table 11 – U.S. Aluminum Smelters Shut Down Permanently Since 2012				
Company	**Location**	**Capacity** (Metric Tons/Year)	**Jobs Lost**	**Comments**
Alcoa	Alcoa, TN	215,000	450	Last produced 2009; shutdown made permanent 2012
Alcoa	Massena, NY (East)	125,000	500	Last production 2014; shutdown permanent 2015
Alcoa	Rockdale,TX	191,000	1,000	Last production 2008; shutdown permanent 2017
Century	Ravenswood, WV	170,000	600	Last production 2009; shutdown permanent 2014
Ormet	Hannibal, OH	265,000	700	Last production 2012; shutdown permanent 2014
Columbia Falls/Glencore	Columbia Falls, MT	168,000	200	Last production 2009; shutdown permanent 2015
TOTAL		**1,134,000**	**3,450**	
Note: Although Alcoa announced in 2016 that its 269,000 metric ton capacity Warrick smelting operations in Evansville Indiana would be permanently closed, in July 2017 it said that three of five pot lines would be restarted by the second quarter of 2018, providing 275 jobs.				
Source: U.S. Geological Survey				

2. Secondary Aluminum Production Capacity

As has been noted, secondary aluminum production today accounts for a substantial portion of the total supply of aluminum in the United States. According to the Aluminum Association, about 75 percent of all the aluminum ever produced is still in use today. Table 12 below provides statistics on the recovery of aluminum from new and old scrap. In 2016, aluminum recovered from scrap was 3.6 million metric tons, which was over four times primary aluminum production that year (841,000 metric tons). This figure represents secondary production by merchant producers; captive secondary production by downstream aluminum companies is not included.

The USITC study also included an estimate for change in U.S. production and production capacity for secondary unwrought aluminum. The ITC found that U.S. secondary production capacity increased by 5.6 percent between 2011 and 2015, while actual production increased by 13.4 percent during that timeframe. The USITC report estimates that merchant secondary aluminum producers operated at about 80 percent of capacity in 2015.[50]

Despite its increasing usage, there is insufficient recycled aluminum available to meet growing demand for aluminum. Most of the major downstream aluminum manufacturers rely on a combination of secondary aluminum and primary aluminum in their manufacturing operations. The amount of primary versus recycled aluminum used varies on the specific product and its applications; manufacturers must control the properties of the alloy precisely to meet product specifications, which often requires using primary aluminum.

Moreover, as aluminum is repeatedly recycled, impurities from paint, labels and other metals build up, affecting product composition and performance. A study by materials scientists at the Massachusetts Institute of Technology [51] found that as more and more aluminum scrap its recycled, there are likely to be more problems caused by impurities.

Specialized applications such as airplane parts and electronics require the cleanest materials, for which recycled aluminum is not suitable. The MIT scientists note that there is a need for more research on ways to reduce accumulated contaminants, and that this is an area in which there has been underinvestment to date. As U.S. aluminum capacity shifts away from primary to secondary production, developing methodologies to increase the usability of ever-decreasing quality scrap is of major importance. Since secondary scrap production in the United States is dominated by numerous smaller operations, their investment in R&D in this area is not likely to be sufficient.

[50] US ITC Report, p. 151.

[51] http://news.mit.edu/2012/aluminum-recycling-study-0306

Table 12– U.S. Secondary Recovery of New Aluminum and Old Aluminum Scrap Metric Tons (000)	
Year	**Scrap Recovery**
2011	3,110
2012	3,380
2013	3,420
2014	3,570
2015	3,380
2016	3,610
Note: The data presented on secondary recovery of aluminum are different from those reported by The Aluminum Association in its U.S. consumption information.	
Source: U.S. Geological Survey: Mineral Industry Surveys	

3. Canadian Primary Aluminum Capacity

The U.S. and Canadian defense industrial bases are integrated. This cooperative relationship has existed since 1956 and is codified in a number of bilateral defense agreements. For example in 1987, DoD (all Services), the Defense Logistics Agency (DLA), the Office of the Secretary of Defense (OSD), and the Canadian Department of National Defence (DND) joined together to form a North American Technology and Industrial Base Organization (NATIBO). NATIBO is chartered to promote a cost effective, healthy technology and industrial base that is responsive to the national and economic security needs of the United States and Canada. Current policy calls for a national defense force that derives its strength and technical superiority from a unified commercial- military industrial base.

While small compared to China's production, Canada is the third largest producer of primary aluminum in the world, with an estimated 3.15 million metric tons produced in 2016, up from 2.83 million metric tons in 2015.[52] There are 10 operational smelters in Canada owned by three companies: Alcoa, Rio Tinto Alcan, and Aluminerie Alouette.

[52] USGS and Aluminum Association of Canada, January, 2017

In 2016, Canada exported about 2.3 million metric tons of primary aluminum to the United States – which represents over 70 percent of its total production. Canadian primary aluminum production is important to the U.S. aluminum industry.

4. Downstream Aluminum Production

There are over a thousand companies in the United States involved in the production of downstream aluminum products – such as bars, rods, sheet, plate, extrusions, tubes, pipes, forgings and castings. Many of these are small- and medium-sized businesses that serve specialized markets. The downstream industry is the largest segment of the overall aluminum industry in the United States, and is second in size only to that of China.[53]

This industry segment is diverse – from production of large-volume commodity-grade articles such as can sheet for beverage cans, to high value added goods, including specialized products for the defense sector. Overall, downstream production is a capital-intensive process; some products require sophisticated manufacturing techniques. The U.S. industry is widely considered to be one of the world's most technically advanced.

Due to its size and diversity, there is little publicly available information on the production of the downstream aluminum industry as a whole. According to the American Foundry Association, there are 130 U.S. aluminum foundries in the defense casting supplier database maintained by the Defense Logistics Agency. These firms – many of which are small businesses – have been identified as qualified suppliers available to produce the over 10,000 distinct aluminum cast components procured by the military.[54]

[53] USITC Report, page 142

[54] Written submission of Doug Kurkul, CEO of the American Foundry Society

The U.S. International Trade Commission's report contains data from market research firm CRU Group for U.S. production of certain downstream aluminum products –flat rolled, extrusions, and wire and cable.

For flat-rolled aluminum, which includes HTS categories 7606 (plate, sheet and strip) and 7607 (foil), the U.S. is the world's second largest producer, after China. These types of products are used extensively in automobile and aerospace applications. While U.S. production has been essentially flat between 2012 and 2015, China's production has grown from 6.64 million metric tons in 2011 to 9.2 million metric tons in 2015 – a 38 percent increase in just four years. According to CRU, the U.S. flat-rolled aluminum sector is operating at about 70 percent of capacity throughout the period.

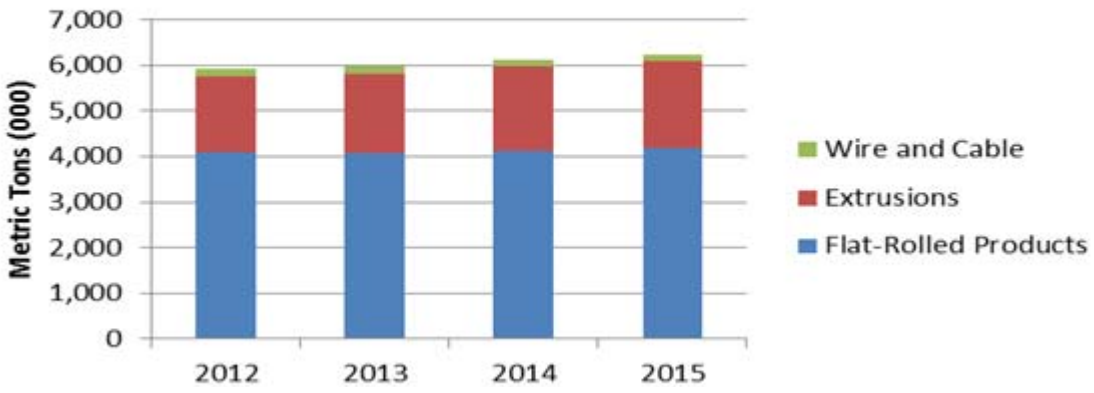
Extruded aluminum products (including bars, rods and profiles in HTS 7604 as well as pipes and tubes in HTS 7608) are used mainly in building and construction applications. The U.S. produced 1.9 million metric tons of aluminum extrusions in 2015, with the sector showing modest growth in production over the past four years. U.S. production, while second in the world, is small compared to China's production, which topped 17 million metric tons in 2015. China's production of extrusions accounted for nearly two thirds of global production, and has been increasing year over year (due to demand for China's massive infrastructure development).

U.S. production of aluminum wire and cable is small and declining (*see* Table 13), with just 129,000 metric tons produced in 2015 (ranking fifth in the world after China, India, Canada, and Russia).

For comparison purposes, China produced nearly five million metric tons in 2015 (60 percent of global production). Wire and cable is used in building and construction, and also in electricity transmission and distribution systems.

Table 13 – U.S. Production of Wrought Aluminum Products (000 Metric Tons)					
Product	**HTS**	**2012**	**2013**	**2014**	**2015**
Flat-Rolled					
HTS 7606, 7607	Production	4,088	4,070	4,130	4,180
	Capacity	5,752	5,772	5,913	6,094
	Capacity Utilization	71%	71%	70%	69%
Extrusions HTS 7604, 7608	Production	1,673	1,728	1,853	1,908
Wire and Cable HTS 7605	Production	168	177	134	129
Source: CRU Group, as cited in the USITC Report, pp. 75-82					

Figure 4 – U.S. Production of Downstream Aluminum Products



Source: CRU Group, as cited in the USITC Report, pp. 75-82

Additional data on the U.S. downstream aluminum industry are available based on the U.S. International Trade Commission's survey (which had a 64 percent response rate). While the survey did not capture the entire U.S. industry, the agency estimated total U.S. production based on these responses. The Table below shows data on U.S. production, capacity, and capacity utilization for

downstream aluminum products, based on the responses to the USITC industry survey.

USITC's survey results indicate that production rose 13 percent between 2011 and 2015. The biggest sector of the downstream industry in the United States is flat rolled products (62 percent), followed by extrusion (32 percent). The USITC study also reported on capacity utilization rates for the companies responding to their survey: overall, the downstream industry was operating at 78 percent of capacity. However, this figure varied significantly by product sector: 99 percent for aluminum plate manufacturers (benefiting from strong demand from the auto sector); 62 percent for wire and cable; 72 percent for rod, bar and profile; and just 41 percent for tube and pipe producers.[55]

[55] USITC Report, p. 152

Table 14 – U.S. Production, Capacity, and Capacity Utilization – Wrought Aluminum Products (000 Metric Tons)					
Product	**HTS**	**2012**	**2013**	**2014**	**2015**
Plate, Sheet, Strip and Foil (Flat Rolled Products)					
HTS 7606, 7607	Production	4,470	4,266	4,361	4,393
	Capacity	4,965	4,684	4,649	4,735
	Capacity Utilization	90.0%	91.1%	93.8%	92.8%*
Wire					
HTS 7605	Production	454	451	422	445
	Capacity	741	745	720	718
	Capacity Utilization	61.3%	60.5%	58.6%	62.1%
Bars, Rods, Profiles					
HTS 7604	Production	1,597	1,682	1,764	1,835
	Capacity	2,328	2,436	2,508	2,566
	Capacity Utilization	68.6%	69.1%	70.3%	71.5%
Tube and Pipe					
HTS 7608	Production	325	356	402	434
	Capacity	959	994	1,049	1,049
	Capacity Utilization	33.9%	35.8%	38.3%	41.4%
TOTAL					
	Production	6,603	6,754	6,948	7,107
	Capacity	8,750	8,858	8,927	9,068
	Capacity Utilization	75.5%	76.3%	77.8%	78.4%

Source: USITC Survey, USITC Report – "Aluminum: Competitive Conditions Affecting U.S. Industry, " Appendix H, p. 518, July 2017.
*CRU Group reports 69 percent in 2015 for flat rolled aluminum producers

While USITC survey respondents reported very high levels of capacity utilization in the plate, sheet and strip sector, this capacity utilization rate was markedly higher than the comparable number reported by CRU Group – 69 percent in 2015 for flat rolled aluminum producers.

CRU data, as reported in the USITC report, indicate that Chinese flat rolled products manufacturers are operating at only 62 percent of capacity. Although extruded products account for the highest percentage of Chinese wrought

aluminum production, the largest amount of U.S. imports from China are in the flat-rolled product categories – plate, sheet and strip (HTS 7606) and foil (7607). It is likely that excess Chinese capacity and production in this segment, for which internal Chinese demand is insufficient, is being unloaded onto world markets, including the United States.

Major U.S. Downstream Aluminum Companies

The leading integrated aluminum production companies in the United States making downstream products include Constellium, Novelis, Aleris, Kaiser, Arconic, and Sapa. While commercial/industrial sectors account for most of their sales, these companies are also major suppliers of aluminum products for the defense industry. While the defense-related production of these companies makes up a small portion of their business, the same equipment is used to make military as well as commercial production. It is large-volume standard products that enable the companies to invest in fixed equipment and capacity that support the production of high-value added products, including defense.

With U.S. headquarters in Atlanta, Georgia, *Novelis* operates 24 facilities in 10 countries; it is a subsidiary of Indian aluminum giant Hindalco. The company has 4,000 employees in the United States at seven production facilities and two research and development/engineering centers. Novelis is the world's largest producer of flat-rolled aluminum products (e.g., plate and sheet) that are used to make beverage cans, building and structural products, and components for cars and trucks; it is also a leading recycler of beverage cans. Novelis states that unfairly priced imports originating from China and elsewhere are putting its U.S. operations at risk. The company was forced to shutter a facility in Kentucky and exit the aluminum converter foil business in 2008; in 2014, it reduced activities at its Indiana facility, exiting the household aluminum foil market due to unfairly priced imports from China.

Kaiser Aluminum, based in California, was founded in 1946 and was once a fully integrated aluminum producer with U.S. smelting operations. Its original smelter was purchased from the United States Government, which built it to satisfy World War II production needs. Kaiser's smelters were shut down in 2000, and the company underwent bankruptcy in 2002. Today, Kaiser operates 11 fabricating

facilities in the United States with 2,700 employees and is a leading producer of aluminum products (sheet, plate, extrusions, rod, bar) for defense, aerospace, satellite, automotive and custom industrial applications. The company has invested $630 million since 2006 to increase capacity, lower costs and improve quality.

Constellium, a Netherlands company with U.S. headquarters in Baltimore, Maryland is also a major manufacturer of downstream aluminum products, with 12,000 employees worldwide. The company designs and manufactures aluminum products for the aerospace, automotive, packaging and defense markets. The United States market generates about 40 percent of the company's $5 billion in revenue. Constellium invested $1.8 billion in its U.S. plants in the last five years, and opened a new R&D facility in Plymouth, Michigan.

In Muscle Shoals, Alabama, Constellium produces cansheet for the packaging industry at its plant with 1,200 employees. Its Ravenswood, West Virginia facility, with 1,050 employees produces advanced alloyed plates for military aircraft, armored vehicles and U.S. Navy vessels. The company partners with the U.S. Army through the U.S. Army Tank Automotive Research Development and Engineering Center (TARDEC) in developing new aluminum solutions for combat vehicles of the future. Constellium states that it has been negatively affected by imports of low-price aluminum plate from China, which have displaced Constellium's products in the market.

Arconic, headquartered in Pittsburgh, Pennsylvania, was created in 2016 when Alcoa split into two companies, manufactures high-value added downstream aluminum products. The company has 22,750 employees in 45 plants in the United States. While part of Alcoa, the company invested over $3.1 billion to modernize facilities since 2009. Arconic is a leading supplier of aluminum products to the DoD – including armor plate, aluminum bulkheads for aircraft, and marine applications. The company (again, as Alcoa), collaborated on R&D and manufacturing with the DoD to develop special alloys and manufacturing processes. Arconic's Davenport, Iowa rolling mill produces high-purity aluminum products needed for such defense programs as the Joint Strike Fighter and Joint Light Tactical Vehicle using a process called fractional crystallization.

Aleris, headquartered in Beachwood, Ohio, is a leading producer of rolled aluminum and extruded aluminum products for the aerospace, automotive, defense, construction and packaging markets. It is also a producer of secondary aluminum made from recycled scrap. The company filed for Chapter 11 bankruptcy in 2009, emerging in 2010 as a privately held company. It has 12 production facilities (nine in the U.S.; two in Europe and one in China) and three "innovation centers" (two in Europe and one in Zhengjiang, China). The Chinese R&D center opened in 2014 to support development of aircraft and commercial plate products for Aleris's Chinese plant. Aleris recently completed an expansion of its rolling mill in Lewisport, Kentucky (capacity 220,000 metric tons per year) and began commercial production of body sheet for the automotive industry. Chinese aluminum extrusion company Zhongwang sought to purchase Aleris, but the transaction was withdrawn in November, 2017 due to concerns of the federal Committee on Foreign Investment in the United States (CFIUS).

Sapa Extrusions, a Norwegian company, is the world's leading producer of aluminum extruded profiles and aluminum tubing. Its products are used in many industry sectors, including automotive, heating and ventilation, and building and construction.

The company has 22,800 employees in 40 countries; in North America there are 6,500 employees in 23 facilities. It has four R&D Centers—three in Europe and one in Troy, MI. According to the company's 2016 annual report, North American sales volume was 585,000 metric tons.

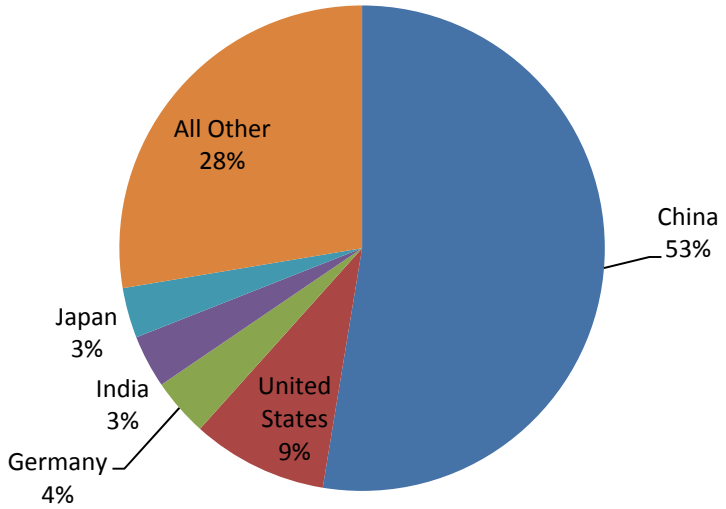
D. Domestic Production is Well Below Demand

In 2016, global primary aluminum consumption was 59.7 million metric tons, reflecting a 5.4 percent year-over-year increase. This was the seventh straight year of significant growth for aluminum consumption, and growth is forecast to continue at this rate.

The world's top five leading consuming countries were responsible for more than 72 percent of total aluminum demand in 2016 (see Figure 5). According to CRU International, the leading aluminum consuming markets in 2016 were China, the United States, and Germany.

Figure 5 - Global Consumption of Primary Aluminum

(2016 Total = 59.7 Million Metric Tons)



Source: CRU Group, as cited in the USITC Report

Table 15 - Apparent North American Aluminum Consumption – By Major Market Thousands of Metric Tons				
Major Market	**2015**	**% of Total**	**2016**	**% of Total**
Building & Construction	1,421	14	1,468	14
Transportation	4,185	40	4,227	40
Consumer Durables	742	7	795	8
Electrical	799	8	837	8
Machinery & Equipment	768	7	769	7
Containers & Packaging	2,135	21	2,160	20
Other	328	3	312	3
Domestic, total	**10,378**	**100**	**10,583**	**100**

Source: The Aluminum Association (Converted from Millions of Pounds)

Combined U.S. and Canadian shipments of all types of aluminum (primary, secondary, as well as downstream production of semi-manufactures) totaled 12.0 million metric tons in 2016, according to the Aluminum Association.[56] The transportation sector is the largest North American market for aluminum, accounting for 4.2 million metric tons or 35 percent of total consumption: this sector's use of aluminum is expected to continue to grow as automakers strive to make lighter and more fuel-efficient vehicles. Another major factor in demand from the transportation sector is aircraft; the International Aluminum Institute estimates that that 80 percent of an aircraft's weight is aluminum.

U.S. consumption of primary aluminum has steadily increased rising by 46 percent since 2000, according to the CRU International. In 2016, CRU estimates that the United States consumed nearly 5.4 million metric tons, or about nine percent of the world's total consumption of 60 million metric tons of primary aluminum. While China is by far the leading consumer of primary aluminum, its consumption is well below its production level, whereas the United States production is substantially lower than consumption.

The U.S. Geological Survey (USGS) statistics show increases in U.S. apparent consumption[57] of aluminum from 4.13 million metric tons in 2012 to 5.22 million metric tons in 2015 (a 26 percent increase over the 4-year period).[58] U.S. production in 2015 (primary and secondary) totaled just over three million metric tons; domestic production fell even further in 2016, while demand for aluminum continued to increase.

Based on USGS production and U.S. Census statistics for U.S. exports and imports of primary aluminum, U.S. import dependence for primary aluminum was nearly 90 percent of apparent consumption in 2016, up from 64 percent in 2012.

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[56] U.S. Government statistics are not available for U.S. production or consumption of aluminum other than for primary aluminum; Aluminum Association figure is based on U.S. and Canadian Producer Shipments plus imports and are included in the "Fact at a Glance-2016," December, 2017 (converted to metric tons from pounds) and includes exports (except exports between the U.S. and Canada).

[57] Defined as primary production + secondary production + net import reliance for crude aluminum and aluminum semi-manufactures (excluding imported scrap).

[58] USGS, Mineral Commodity Summaries, January 2017

U.S. import reliance increased because domestic primary aluminum production decreased, so U.S. manufacturers by necessity filled their materials needs through imports. Since primary aluminum companies are globalized, some of the imported aluminum was from the foreign business units of U.S.-based companies.

The Aluminum Association uses a different methodology to estimate U.S. consumption[59] of aluminum (including unwrought and mill products). The Association's data show that U.S. aluminum consumption was nearly 10 million metric tons in 2006, before declining during the years of economic crisis that followed and not yet fully recovering. There has been a dramatic increase in the share of U.S. consumption that is satisfied through imports in just the past two years, rising from a stable 51 percent from 2011- 2013 to over 64 percent for 2016. This is a direct result of the decline in U.S. primary aluminum production driven by falling prices and expanding non-U.S. production. This increase in imports has occurred in both primary aluminum and downstream products.

[59] U.S. apparent aluminum consumption = primary aluminum production + recovery of secondary aluminum + imports of unwrought aluminum + imports of mill products – exports of unwrought aluminum – exports of mill products.

Table 16 - U.S. Aluminum Supply/Aluminum Consumption Balance (Millions of Metric Tons)											
	2006	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**
Primary	2.28	2.56	2.66	1.73	1.73	1.99	2.07	1.95	1.71	1.59	0.82
Additives	0.05	0.05	0.05	0.03	0.03	0.04	0.04	*0.04*	*0.03*	0.03	0.02
Melt Loss	-0.02	-0.03	-0.03	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.01
Secondary Recovery	4.09	3.98	3.06	2.54	3.17	3.50	3.73	3.98	3.85	3.87	4.06
Imports (Mill Products)	1.58	1.43	1.25	1.07	1.26	1.23	1.29	1.25	1.42	1.60	1.68
Imports (Ingot)	3.47	2.95	2.81	2.93	2.67	2.86	2.93	3.16	3.33	3.40	4.26
Change in Prod Inv.	-0.01	0.00	-0.17	-0.28	0.08	0.02	0.09	-0.03	0.17	0.08	0.02
Total U.S. Supply*	**11.46**	**10.94**	**9.98**	**8.56**	**8.77**	**9.57**	**9.95**	**10.40**	**10.16**	**10.39**	**10.82**
Exports (Mill Products)	1.13	1.09	1.14	0.92	0.98	1.15	1.23	1.29	1.27	1.24	1.22
Exports (Ingot)	0.38	0.37	0.35	0.32	0.38	0.41	0.43	0.42	0.41	0.36	0.30
Total U.S. Consumption	**9.95**	**9.48**	**8.48**	**7.32**	**7.41**	**8.02**	**8.29**	**8.68**	**8.47**	**8.78**	**9.30**
Imports as % of Consumption	**51%**	**46%**	**48%**	**55%**	**53%**	**51%**	**51%**	**51%**	**56%**	**57%**	**64%**

Source: Aluminum Association
Note: Consumption figures cited in this table are slightly lower than those for Table 14, which reports for North America – including Canada and the United States. Table 15 data reports U.S. production and consumption only.

E. U.S. Imports of Aluminum are Increasing

1. Overview of Aluminum Imports in Aggregate

Overall U.S. imports of the aluminum categories subject to this investigation *combined* (HTS #7601, 7604, 7605, 7606, 7607, 7608, 7609. 7616.99.51.60 and 7616.99.51.70) were valued at $13.0 billion in 2016 -- a 15 percent increase over 2013 import levels. For the first ten months of 2017, imports are up 30 percent on a value basis compared to the same period in 2016. These import figures are heavily influenced by changes in global aluminum prices. While imports on a value basis leveled off between 2014 and 2016, this is largely due to declining aluminum prices.

Imports of aluminum on weight basis are a better indication of true trade flows, because they are unaffected by fluctuations in prices. By weight, U.S. imports in these aluminum categories were 5.9 million metric tons in 2016, up 34 percent from 4.4 million metric tons in 2013. For the first 10 months of 2017, imports are running 18 percent above 2016 levels on a tonnage basis. There is no leveling off in the level of imports on a volume basis; rather, there has been a consistent increase year over year.

Canada is the leading source of aluminum imports into the United States, accounting for about 43 percent of total imports by both value and weight in 2016. Imports from Canada have been at consistent level over the four-year period at about 2.6 million metric tons per year.

In contrast, imports from the second leading source (by value), China, increased by 70 percent by value and 75 percent by weight between 2013 and 2015. Imports from China by weight were 531,000 metric tons valued at $1.3 billion in 2016, a slight decline from 2015 levels. However, imports from China in all aluminum categories are up by about 33 percent by value and 25 percent by weight for the first 10 months of 2017 compared with the same period last year.

By product category, unwrought aluminum (primary) makes up by far the largest portion of imports – 63 percent of the total by value. The second largest category -- aluminum plates, sheets and strips -- accounts for an additional 19 percent of imports.

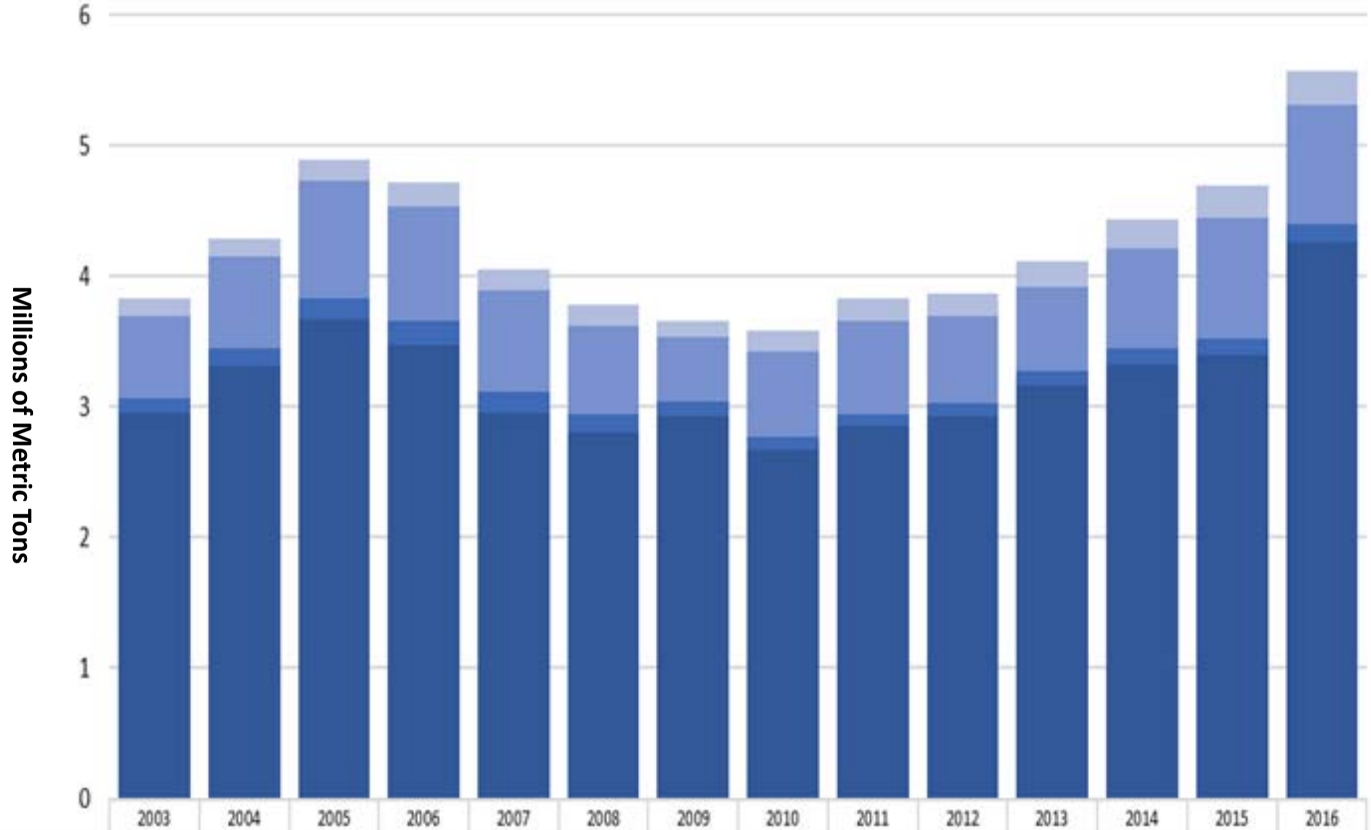
The following subsections present detailed information on U.S. imports of aluminum in specific product categories, as the source of the imports varies significantly. In general, the import data are provided in metric tons, which allows for a true picture of trends in import levels (versus import data by value, which fluctuate based on aluminum prices).

Table 17 – U.S. Imports of Aluminum by Country and Value (HTS 7601, 7604, 7605,7606, 7607, 7608, 7609; 7616.99.51.60 & 7616.99.51.70)							
Year >>	**2013**	**2014**	**2015**	**2016**	**2016 Jan-Oct**	**2017 Jan-Oct**	**% Change YTD 2016 - 2017**
Country	***Thousands of Dollars (000)***						
Canada	6,202,862	6,524,386	6,083,989	5,608,651	4,609,071	5,771,389	25.20%
Russia	525,499	796,395	716,134	1,349,508	1,116,152	1,301,650	16.60%
China	874,443	1,157,244	1,491,461	1,337,719	1,103,326	1,468,632	33.10%
United Arab Emirates	581,412	620,781	661,933	1,029,269	804,818	1,176,366	46.20%
Bahrain	165,496	246,133	282,696	398,164	321,512	498,850	55.20%
Germany	466,761	378,888	397,349	345,715	295,852	232,961	-21.30%
Argentina	229,620	175,859	198,159	330,666	277,140	368,008	32.80%
Qatar	208,908	202,360	224,177	300,731	249,935	269,809	8.00%
France	85,536	160,366	168,485	192,993	164,489	165,625	0.70%
Mexico	186,479	228,357	219,742	189,505	157,617	200,427	27.20%
South Africa	221,733	235,281	178,286	186,206	155,008	322,552	108.10%
Austria	126,088	146,790	158,714	156,761	133,369	131,032	-1.80%
Japan	169,885	187,383	148,852	144,209	120,740	130,365	8.00%
Venezuela	102,845	219,705	126,485	116,038	81,800	159,401	94.90%
India	65,319	87,543	139,038	111,159	91,853	282,515	207.60%
All Other:	1,136,361	1,200,656	1,422,447	1,160,298	965,824	1,417,679	46.80%
Total	**11,349,245**	**12,568,126**	**12,617,948**	**12,957,591**	**10,648,507**	**13,897,259**	**30.50%**
Source: U.S. Census Bureau, accessed through USITC Dataweb							

Table 18 - U.S. Imports of Aluminum by Country and Weight (HTS 7601, 7604, 7605,7606, 7607, 7608, 7609; 7616.99.51.60 & 7616.99.51.70)							
Year >>	**2013**	**2014**	**2015**	**2016**	**2016 Jan-Oct**	**2017 Jan-Oct**	**% Change YTD 2016 - 2017**
Country	**Metric Tons**						
Canada	2,677,401	2,631,222	2,661,770	2,759,687	2,274,594	2,478,455	9.0%
Russia	219,256	356,014	309,396	755,487	628,076	625,792	-0.4%
United Arab Emirates	250,852	260,934	292,785	555,857	435,170	569,405	30.8%
China	304,069	410,043	534,940	530,580	438,446	547,127	24.8%
Bahrain	63,522	96,579	114,654	190,042	153,705	213,614	39.0%
Argentina	104,465	79,475	91,182	187,562	157,572	182,004	15.5%
Qatar	94,985	91,731	86,325	115,705	96,155	103,711	7.9%
Germany	96,378	77,074	92,064	85,774	74,418	48,805	-34.4%
South Africa	71,814	83,748	57,037	73,195	60,749	141,600	133.1%
Venezuela	49,999	109,568	67,443	69,526	50,509	82,078	62.5%
India	20,769	31,830	60,041	53,986	45,115	132,014	192.6%
Saudi Arabia	471	14,404	76,132	53,768	44,288	40,620	-8.3%
Mexico	55,320	67,130	62,007	52,852	44,134	56,908	28.9%
Brazil	50,549	37,203	18,748	48,998	35,653	33,010	-7.4%
Indonesia	62,598	60,116	78,013	45,127	34,579	65,007	88.0%
All Other	287,050	335,970	379,703	360,390	309,595	443,793	43.3%
Total	**4,409,497**	**4,743,040**	**4,982,238**	**5,938,536**	**4,882,759**	**5,763,945**	**18.0%**
Source: U.S. Census Bureau, accessed through USITC Dataweb							

Table 19 – U.S. Imports of Aluminum by Product Category (HTS 7601, 7604, 7605,7606, 7607, 7608, 7609; 7616.99.51.60 & 7616.99.51.70)							
Year >>	**2013**	**2014**	**2015**	**2016**	**2016 Jan-Oct**	**2017 Jan-Oct**	**% Change YTD 2016 - 2017**
Type of Aluminum Product By HTS Code	***Thousands of Dollars (000)***						
7601 ALUMINUM, UNWROUGHT	6,903,314	7,656,615	7,331,489	7,909,651	6,435,919	8,678,149	34.80%
7606 ALUMINUM PLATES, SHEETS AND STRIP, OVER 0.2 MM (0.0079 IN.) THICK	2,079,139	2,355,549	2,800,951	2,522,666	2,103,753	2,633,656	25.20%
7607 ALUMINUM FOIL (WHETHER OR NOT PRINTED OR BACKED WITH PAPER OR OTHER BACKING MATERIALS), NOT OVER 0.2 MM (0.0079 IN.) THICK (EXCLUDING ANY BACKING)	901,904	973,504	933,419	909,127	762,763	877,565	15.10%
7604 ALUMINUM BARS, RODS AND PROFILES	643,543	730,516	804,536	799,818	670,860	840,357	25.30%
7605 ALUMINUM WIRE	583,206	596,571	500,410	589,363	485,734	650,235	33.90%
7608 ALUMINUM TUBES AND PIPES	141,497	151,411	156,545	145,324	121,978	136,488	11.90%
7609 ALUMINUM TUBE OR PIPE FITTINGS (INCLUDING COUPLINGS, ELBOWS, AND SLEEVES)	96,643	103,961	90,598	81,641	67,500	80,808	19.70%
TOTAL	**11,349,246**	**12,568,127**	**12,617,948**	**12,957,590**	**10,648,507**	**13,897,258**	**23.00%**
Source: U.S. Census Bureau, accessed through USITC Dataweb							

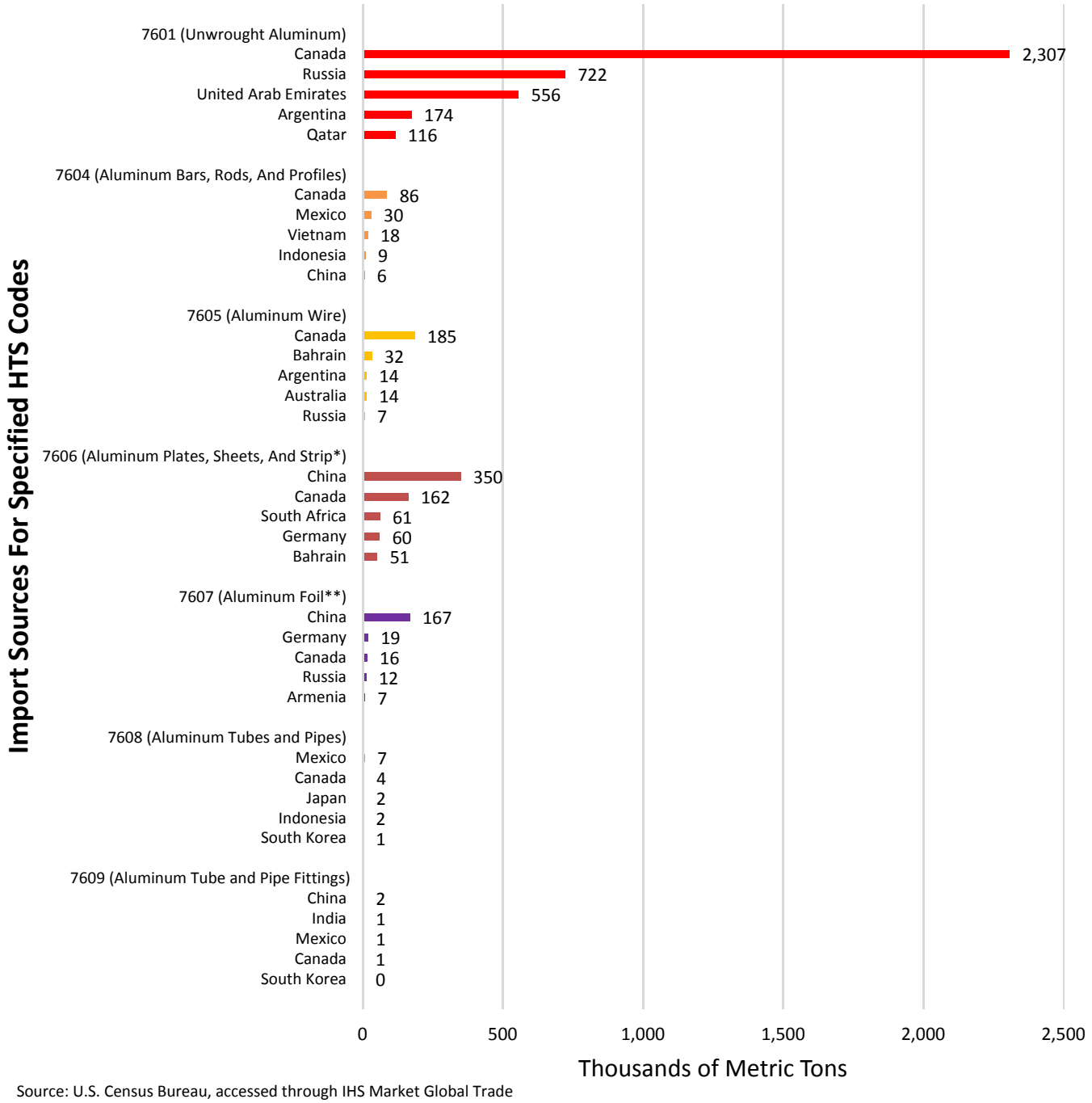
Figure 6 - U.S. Aluminum Imports



	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Foil	133,809	135,445	166,888	173,336	160,416	160,240	131,357	163,432	181,984	175,736	198,257	224,054	236,687	253,725
Plates, Sheets, and Strip	636,286	698,287	900,075	887,389	778,030	672,167	484,697	644,806	713,605	656,741	643,210	763,454	924,795	922,115
Bars, Rods, and Profiles	103,788	134,292	158,982	177,220	157,801	131,390	110,405	103,499	77,454	106,137	109,762	121,490	129,267	134,335
Unwrought	2,956,435	3,318,192	3,668,987	3,474,175	2,950,900	2,811,157	2,933,105	2,670,000	2,861,683	2,926,875	3,161,793	3,327,365	3,396,773	4,259,589

Source: U.S. Census Bureau, accessed through Global Trade Atlas.

Figure 7 - U.S. Top 5 Aluminum Import Sources by HTS Code - 2016



Source: U.S. Census Bureau, accessed through IHS Market Global Trade Atlas. 1.10.2018. *Of a thickness exceeding 0.2mm. **Of A Thickness Not Exceeding 0.2mm.

2. Unwrought Aluminum Imports

Of total U.S. aluminum imports, unwrought (primary) aluminum accounted for the bulk by weight (4.3 of 6.5 million metric tons), with a total value of $7.9 billion. U.S. imports of unwrought aluminum have increased dramatically in recent years -- nearly 40 percent by weight since 2014. In 2016, of the total U.S. imports of 4.3 million metric tons, the majority was from Canada (54 percent), followed by Russia (16 percent), United Arab Emirates (13 percent), Argentina (4 percent), Qatar (3 percent); the rest of the world accounted for 10 percent. While still not among the top sources, imports from Oman, South Africa and Venezuela have shown tremendous growth in the past year.

Table 20 – U.S. Imports of Unwrought (Primary) Aluminum
(HTS 7601)

Year >>	2013	2014	2015	2016	2016 Jan-Oct	2017 Jan-Oct	% Change YTD 2016 - 2017
Country	**Metric Tons**						
Canada	2,273,784	2,215,438	2,235,854	2,306,770	1,890,587	2,097,491	10.90%
Russia	189,599	325,420	279,980	721,614	599,295	581,465	-3.00%
United Arab Emirates	250,432	260,921	292,764	555,824	435,164	567,504	30.40%
Argentina	97,495	72,189	85,944	173,714	145,992	171,162	17.20%
Qatar	94,985	91,731	86,325	115,705	96,155	103,708	7.90%
Bahrain	29,268	53,873	74,423	106,592	91,675	97,582	6.40%
Venezuela	49,997	108,302	66,937	66,895	48,458	78,204	61.40%
Saudi Arabia	469	14,403	76,130	53,082	44,288	30,246	-31.70%
Brazil	33,923	22,372	3,701	28,828	18,912	8,389	-55.60%
India	8	322	38,795	26,497	22,537	91,135	304.40%
South Korea	14,841	15,283	16,364	14,624	12,560	10,951	-12.80%
South Africa	12,434	26,282	9,873	12,006	8,972	99,181	1005.50%
Mexico	25,262	32,485	22,660	11,864	9,619	16,052	66.90%
France	4,259	8,607	10,874	9,994	8,308	7,944	-4.40%
Oman	0	35	0	9,154	9,154	13,564	48.20%
All Other	85,037	79,704	96,186	46,226	41,188	136,705	231.90%
TOTAL	**3,161,793**	**3,327,367**	**3,396,772**	**4,259,587**	**3,482,864**	**4,111,283**	**18.04%**

Source: U.S. Census Bureau, accessed through USITC Dataweb

3. Aluminum Bars, Rods and Profiles

For aluminum bars, rods and profiles (HTS 7604) the total value of U.S. imports (from all sources) in this category was $801 million in 2016, down slightly from $804 million in 2015. By weight, there was a slight increase in import levels in 2016 over 2015 levels (200,000 metric tons). Canada and Mexico are major players in this category. Imports from China fell off beginning in 2015 from earlier levels. Imports from Vietnam increased dramatically during the period, rising by over 800 percent between 2013 and 2016, with the trend continuing in 2017. Some industry analysts have observed that a portion of the imports in this category from Vietnam are likely Chinese products that are being transshipped to avoid duties.

Table 21 - U.S. Imports of Aluminum Bars, Rods & Profiles
(HTS 7604)

Year >>	2013	2014	2015	2016	2016 Jan-Oct	2017 Jan-Oct	% Change YTD 2016 - 2017
Country	**Metric Tons**						
Canada	78,733	84,031	91,062	85,820	72,619	76,400	5.20%
Mexico	19,377	24,234	26,603	29,992	25,173	27,765	10.30%
Vietnam	1,846	3,706	9,029	17,751	14,965	19,318	29.10%
Indonesia	2,441	6,833	8,872	8,852	7,057	9,309	31.90%
China	9,196	9,700	5,327	5,910	4,842	3,847	-20.50%
Colombia	2,438	2,564	4,107	5,806	4,895	6,404	30.80%
Malaysia	4,799	3,835	5,152	5,380	4,701	5,531	17.70%
Russia	5,445	6,628	6,076	4,715	3,906	5,823	49.10%
Germany	4,088	4,708	4,289	4,154	3,277	3,839	17.10%
Italy	3,307	4,422	4,168	4,093	3,342	5,163	54.50%
Dominican Republic	2,624	3,021	4,325	3,923	3,371	2,433	-27.80%
India	1,770	2,902	2,408	2,559	2,175	2,880	32.40%
Israel	64	1,194	1,394	2,424	2,198	2,154	-2.00%
Slovenia	2,717	2,739	2,424	2,423	2,134	2,028	-5.00%
Belgium	1,685	1,960	2,281	2,319	1,933	1,808	-6.50%
All Other	11,890	11,634	13,571	16,694	13,688	22,248	62.50%
TOTAL	**152,421**	**174,111**	**191,086**	**202,815**	**170,275**	**196,952**	**15.67%**

Source: U.S. Census Bureau, accessed through USITC Dataweb

4. Aluminum Plate, Sheet and Strip

Aluminum plates, sheets and strip (HTS 7606) are the second largest category of imports (after unwrought aluminum) with a total value of $2.5 billion in 2016. On a weight basis, imports were essentially unchanged in 2016 compared to 2015 levels, but data for the first 10 months of 2017 show a nearly 20 percent increase over the same period in 2017.

Over a third of total imports came from China, and imports from China are on the rise again (after tapering off in 2016). Canada, South Africa, Bahrain and Germany also supply significant amounts of plates, sheet and strip. Imports from Indonesia are on the rise in this category, double in 2017 over 2016 levels.

Table 22- U.S. Imports of Aluminum Plate, Sheet & Strip
(HTS 7606)

Year >>	2013	2014	2015	2016	2016 Jan-Oct	2017 Jan-Oct	% Change YTD 2016 - 2017
Country	**Metric Tons**						
China	173,449	264,943	369,291	349,628	289,567	381,705	31.80%
Canada	125,513	133,537	152,560	161,642	138,029	129,739	-6.00%
South Africa	59,304	57,428	47,053	61,160	51,750	42,324	-18.20%
Germany	74,509	53,372	62,240	60,049	52,462	29,772	-43.20%
Bahrain	24,634	30,593	34,966	51,224	41,575	48,260	16.10%
Indonesia	59,409	51,719	66,842	33,614	25,051	53,535	113.70%
Austria	20,063	26,032	28,376	30,878	26,487	25,976	-1.90%
Japan	2,109	10,820	22,657	24,697	20,746	19,589	-5.60%
India	16,826	26,982	16,727	22,825	18,647	35,749	91.70%
Greece	18,426	18,089	21,631	19,938	16,023	16,181	1.00%
France	3,070	10,658	9,454	15,913	13,061	21,175	62.10%
Brazil	8,053	6,943	9,858	14,845	12,015	15,993	33.10%
South Korea	998	22,165	18,973	10,744	9,972	8,785	-11.90%
Russia	8,670	8,785	10,190	10,218	8,480	9,059	6.80%
United Kingdom	13,942	9,615	11,653	9,451	8,485	5,217	-38.50%
All Other	34,236	31,559	41,911	47,194	37,510	71,722	91.20%
TOTAL	**643,210**	**763,239**	**924,381**	**924,020**	**769,860**	**914,781**	**18.82%**

Source: U.S. Census Bureau, accessed through USITC Dataweb

5. Aluminum Foil

Aluminum foil imports are presented in the table below. The total value of imports in this category was $910 million in 2016, of which $475 million was from China.

On a weight basis, China dominates, accounting for two thirds of the total imports to the United States in 2016. (Note: Aluminum foil imports from China are the subject of an ongoing antidumping/countervailing duty investigation). *See* Appendix D for more information on trade actions related to aluminum.

Table 23 – U.S. Imports of Aluminum Foil
(HTS 7607)

Year >>	2013	2014	2015	2016	2016 Jan-Oct	2017 Jan-Oct	% Change YTD 2016 - 2017
Country	**Metric Tons**						
China	107,130	128,254	151,749	167,464	138,082	152,194	10.20%
Germany	15,380	16,734	17,520	18,705	16,351	12,428	-24.00%
Canada	13,547	13,802	13,521	15,638	13,068	12,635	-3.30%
Russia	126	2,072	7,718	11,803	10,220	13,468	31.80%
Armenia	27,162	26,077	13,787	7,258	6,809	11,647	71.10%
Brazil	8,386	7,778	5,015	5,112	4,513	8,616	90.90%
Austria	3,799	4,136	4,140	3,898	3,385	3,976	17.50%
Sweden	2,326	3,079	3,574	3,505	2,957	2,300	-22.20%
France	3,007	2,969	2,956	2,825	2,372	1,742	-26.50%
South Korea	1,827	1,258	2,279	2,619	2,231	4,039	81.00%
Japan	3,310	3,964	1,275	1,513	1,134	2,158	90.20%
Italy	1,502	1,611	1,425	1,330	1,093	1,007	-7.90%
Turkey	199	290	408	1,021	723	3,512	385.70%
Costa Rica	842	803	999	970	787	2,111	168.30%
Belgium	1,067	555	878	847	740	516	-30.20%
All Other	8,647	10,670	9,370	9,109	7,350	11,913	62.10%
TOTAL	**198,257**	**224,052**	**236,615**	**253,617**	**211,815**	**244,263**	**15.32%**

Source: U.S. Census Bureau, accessed through USITC Dataweb

6. Aluminum Pipe and Tubes

The table below presents data on imports of aluminum pipes and tubes (HTS 7608) as well as pipe and tube fittings (HTS 7609). Unlike the other sectors, imports were down slightly in this category in 2016, but are growing in 2017 due to increases in imports from Mexico. Mexico is the largest supplier in the segment, followed by Canada, China, and Japan.

Table 24– U.S. Imports of Aluminum Pipes and Tubes (HTS 7608-7609)							
Year >>	2013	2014	2015	2016	2016 Jan-Oct	2017 Jan-Oct	% Change YTD 2016 - 2017
Country	Metric Tons						
Mexico	7,710	7,418	9,247	7,963	6,639	10,222	54.00%
Canada	6,417	7,862	7,785	4,755	4,076	4,103	0.70%
China	3,289	3,817	2,907	2,618	2,147	2,865	33.50%
Japan	2,605	2,656	2,771	2,587	2,110	1,746	-17.20%
Indonesia	0	849	1,799	1,881	1,691	1,153	-31.80%
India	1,610	968	1,174	1,559	1,342	1,840	37.10%
South Korea	964	1,007	1,035	1,490	1,314	989	-24.80%
Taiwan	1,457	1,510	1,341	1,282	1,074	1,144	6.50%
Germany	832	893	963	998	828	804	-2.90%
Israel	107	314	710	932	779	1,003	28.70%
Russia	798	559	455	535	486	400	-17.60%
Vietnam	360	411	651	388	266	811	205.60%
Switzerland	300	336	305	304	231	249	7.50%
France	220	203	210	299	250	184	-26.20%
Italy	103	149	143	162	135	197	45.70%
All Other	1,615	1,615	1,019	982	767	1,093	42.60%
TOTAL	**28,386**	**30,567**	**32,515**	**28,737**	**24,134**	**28,804**	**19.35%**
Source: U.S. Census Bureau, accessed through USITC Dataweb							

7. Aluminum Castings & Forgings

Aluminum castings and forgings, the final category addressed in the report, also are an area where imports are on the rise (*see* Table below). Overall, imports are up 11 percent in 2017 (January-October) compared with 2016. China is the leading source of imports; while imports from China fell in 2016 from 2015 levels, they increased thus far in 2017.

Table 25– U.S. Imports of Aluminum Castings and Forgings
(HTS 7616.99.50.60; 7616.99.50.70; 7616.99.51.60;7616.99.51.70)

Year >>	2013	2014	2015	2016	2016 Jan-Oct	2017 Jan-Oct	% Change YTD 2016 -2017
Country	**Metric Tons**						
China	7,901	9,493	13,146	11,284	9,209	10,068	9.30%
Mexico	3,629	3,548	3,757	2,759	2,369	2,543	7.40%
Taiwan	2,401	2,184	2,262	2,242	1,889	1,288	-31.80%
Canada	1,831	2,086	1,869	2,196	1,781	2,581	44.90%
India	1,105	1,790	1,370	1,479	1,294	1,469	13.50%
Czech Republic	65	69	259	902	825	1,213	47.10%
Japan	34	41	335	491	393	477	21.60%
France	292	285	456	449	365	845	131.50%
Italy	293	452	469	343	298	220	-26.20%
Greece	214	273	232	263	245	202	-17.40%
Thailand	362	433	194	254	186	260	39.60%
Poland	12	74	269	248	186	372	100.00%
United Kingdom	242	178	405	218	185	74	-60.20%
South Korea	137	109	121	216	177	41	-76.60%
Hong Kong	25	26	139	195	173	71	-59.10%
All Other	1,941	2,843	3,977	778	694	771	11.10%
TOTAL	**20,484**	**23,884**	**29,261**	**24,318**	**20,270**	**22,497**	**10.99%**

Source: U.S. Census Bureau, accessed through USITC Dataweb

F. United States Aluminum Exports

In 2016, the United States exported a total of $ 6.4 billion in the aluminum product categories subject to this investigation (HTS 7601, 7604-7609, 7616.99.51.60; 7616.99.51.70). The value of U.S. exports fell each year between

2013 and 2016. Exports for the first ten months of 2017 also show a slight decline from the same period in 2016.

The largest category for U.S. exports is aluminum plates sheets and strip ($3.4 billion), followed by aluminum bars, rods and profiles ($1.0 billion) and then unwrought, primary aluminum with $640 million.

Table 26 – U.S. Domestic Exports of Aluminum by Product Category
(HTS 7601, 7604, 7605,7606, 7607, 7608, 7609; 7616.99.51.60 & 7616.99.51.70)

Year >>	2013	2014	2015	2016	2016 Jan-Oct	2017 Jan-Oct	Change YTD 2016 - 2017
Type of Aluminum Product By HTS Code	*Thousands of Dollars (000)*						
7606 ALUMINUM PLATES, SHEETS AND STRIP, OVER 0.2 MM (0.0079 IN.) THICK	3,823,936	3,763,076	3,654,514	3,440,770	2,912,946	2,867,475	-1.60%
7604 ALUMINUM BARS, RODS AND PROFILES	877,081	855,962	864,016	1,048,692	927,545	691,283	-25.50%
7601 ALUMINUM, UNWROUGHT	1,017,585	1,027,678	834,703	639,838	543,750	616,819	13.40%
7607 ALUMINUM FOIL (WHETHER OR NOT PRINTED OR BACKED WITH PAPER OR OTHER BACKING MATERIALS), NOT OVER 0.2 MM (0.0079 IN.) THICK (EXCLUDING ANY BACKING)	513,918	503,743	476,236	458,659	392,299	400,432	2.10%
7608 ALUMINUM TUBES AND PIPES	256,168	285,241	268,566	259,486	221,808	249,122	12.30%
7609 ALUMINUM TUBE OR PIPE FITTINGS (INCLUDING COUPLINGS, ELBOWS, AND SLEEVES)	137,945	161,845	162,389	148,146	122,827	130,193	6.00%
7605 ALUMINUM WIRE	158,700	168,242	153,868	125,886	107,228	103,287	-3.70%
7616.99.51.60, 7616.99.51.70 CASTINGS AN FORGINGS	344,326	334,101	323,698	322,074	266,646	291,516	9.30%
TOTAL	**7,129,659**	**7,099,888**	**6,737,990**	**6,443,551**	**5,495,049**	**5,350,127**	**-2.64%**

Source: U.S. Census Bureau, accessed through USITC Dataweb

By country, the vast majority of U.S. exports of aluminum products go to neighboring countries and NAFTA partners, Mexico and Canada. By value, these two countries accounted for nearly two thirds of U.S. exports.

U.S. exports to Vietnam had a spike in 2016 that did not occur in any other year (including 2017); a closer look at these exports shows that they were primarily in HTS category 7604, and in particular, HTS 760421, which is "Aluminum Alloy Hollow Profiles." The U.S. also saw a spike in imports from Vietnam in 2016.

The composition of U.S. aluminum exports varies significantly by product category. For unwrought (primary) aluminum, exports to Mexico and Canada account for 92 percent of total U.S. exports by value and 95 percent by weight. Currently, Mexico does not have a primary aluminum smelter due to its inability to provide reliable, steady energy.

Table 27 – U.S. Domestic Exports of Aluminum Products by Country
(HTS 7601, 7604, 7605,7606, 7607, 7608, 7609; 7616.99.51.60 & 7616.99.51.70)

Year >>	2013	2014	2015	2016	2016 Jan-Oct	2017 Jan-Oct	Change YTD 2016-2017
Country	Thousands of Dollars (000)						
Mexico	2,466,070	2,616,709	2,540,224	2,262,702	1,910,290	2,077,114	8.70%
Canada	2,014,001	2,078,447	1,989,009	1,834,326	1,561,946	1,592,846	2.00%
Japan	230,043	233,545	248,810	291,370	246,276	130,808	-46.90%
China	328,672	306,023	288,155	276,576	230,832	175,285	-24.10%
South Korea	198,976	230,274	270,181	268,555	227,831	207,001	-9.10%
Vietnam	1,756	17,769	31,185	245,575	245,180	1,341	-99.50%
United Kingdom	188,249	216,728	210,718	193,888	167,247	127,559	-23.70%
France	166,581	157,754	154,687	134,378	110,876	89,070	-19.70%
Germany	140,434	150,749	141,555	114,041	93,441	87,323	-6.50%
Guatemala	58,896	63,414	58,220	56,392	46,690	25,173	-46.10%
Brazil	114,821	92,715	60,598	52,613	46,182	37,844	-18.10%
Taiwan	77,091	50,928	54,310	51,983	43,381	45,181	4.10%
Turkey	42,556	29,330	39,549	40,761	35,631	31,397	-11.90%
Israel	54,180	47,801	40,688	40,219	34,895	35,424	1.50%
Singapore	45,086	49,900	44,926	38,011	30,872	28,579	-7.40%
All Other:	1,002,248	757,801	565,173	542,161	463,478	366,666	-20.90%
Total	**7,129,659**	**7,099,887**	**6,737,989**	**6,443,550**	**5,495,049**	**5,058,610**	**-7.90%**

Source: U.S. Census Bureau, accessed through USITC Dataweb

Table 28– U.S. Exports of Unwrought Aluminum by Value (HTS 7601)							
Year >>	**2013**	**2014**	**2015**	**2016**	**2016 Jan-Oct**	**2017 Jan-Oct**	**Change YTD 2016-2017**
Country	**Thousands of Dollars (000)**						
Mexico	586,992	616,695	495,876	376,711	323,080	350,472	8.50%
Canada	296,882	315,948	249,336	188,746	159,265	185,749	16.60%
France	28,322	15,874	14,047	19,698	15,793	18,601	17.80%
Taiwan	12,819	11,694	12,474	7,816	6,082	9,352	53.80%
Argentina	8,439	5,121	2,748	6,379	6,339	6	-99.90%
Japan	6,855	7,397	7,433	6,116	5,418	6,190	14.20%
Germany	10,421	12,042	11,141	6,099	5,063	5,967	17.90%
The Netherlands	1,050	609	3,712	3,754	3,633	381	-89.50%
South Korea	6,459	5,422	4,967	3,752	3,421	2,389	-30.20%
United Kingdom	3,838	3,454	3,443	3,313	3,091	3,112	0.70%
China	20,777	5,121	2,482	2,221	1,798	2,877	60.00%
United Arab Emirates	36	44	76	2,208	109	8,780	7926.30%
Costa Rica	2,475	631	728	1,914	1,853	163	-91.20%
Singapore	3,953	5,027	3,943	1,609	1,190	1,605	34.80%
Dominican Republic	2,111	518	1,128	1,183	1,183	2,609	120.40%
All Other:	26,156	22,081	21,169	8,319	6,429	18,568	188.80%
Total	**1,017,585**	**1,027,678**	**834,703**	**639,838**	**543,750**	**616,819**	**13.40%**
Source: U.S. Census Bureau, accessed through USITC Dataweb							

Table 29 – U.S. Domestic Exports of Unwrought Aluminum by Weight (HTS 7601)							
Year >>	2013	2014	2015	2016	2016 Jan - Oct	2017 Jan-Oct	% Change YTD 2016 - 2017
Country	Metric Tons						
Mexico	248,514	251,702	220,829	185,266	158,856	158,510	-0.20%
Canada	121,130	125,426	109,316	94,004	79,347	84,423	6.40%
France	8,282	4,980	4,443	5,895	4,733	5,094	7.60%
Argentina	3,358	1,891	1,138	3,172	3,152	3	-99.90%
Taiwan	4,896	4,260	4,570	3,138	2,448	3,668	49.80%
Japan	1,517	1,932	1,855	1,706	1,397	1,783	27.60%
Germany	3,608	3,429	3,167	1,475	1,157	1,802	55.80%
The Netherlands	352	64	1,296	1,449	1,435	60	-95.80%
United Kingdom	1,058	890	734	886	840	602	-28.30%
Costa Rica	882	225	258	840	825	59	-92.90%
South Korea	2,520	4,141	5,073	728	638	611	-4.30%
China	7,470	929	532	590	424	602	42.00%
United Arab Emirates	15	26	37	584	46	3,473	7436.20%
Dominican Republic	817	84	373	554	554	1,240	123.60%
Australia	129	361	306	272	231	627	171.10%
ALL OTHER	**11,911**	**9419**	**7979**	**1953**	**1583**	**6464**	**308.34%**
TOTAL	**416,458**	**409,762**	**361,906**	**302,517**	**257,668**	**269,012**	**4.40%**
Source: U.S. Census Bureau, accessed through USITC Dataweb							

The aluminum plate, sheet, and strip industry segment (HTS 7606) accounts for the biggest portion of U.S. exports of aluminum products subject to this investigation – nearly 900,000 tons valued at over $3.4 billion dollars in 2016. Once again, NAFTA partners Canada and Mexico account for the majority of exports.

Exports in the first 10 months of 2017 are down slightly from 2016 levels, continuing a declining trend that occurred throughout the 2013-2017 period. Overall, since 2013, U.S. exports are down 10 percent by value and weight.

Table 30 - U.S. Domestic Exports of Aluminum Plate, Sheet and Strip By Value (HTS 7606)							
Year >>	**2013**	**2014**	**2015**	**2016**	**2016 Jan-Oct**	**2017 Jan-Oct**	**Change YTD 2016 - 2017**
Country	**Thousands of Dollars (000)**						
Canada	1,159,462	1,219,151	1,232,554	1,172,381	998,394	1,034,915	3.70%
Mexico	1,075,112	1,191,241	1,230,767	1,099,531	911,712	1,033,508	13.40%
South Korea	132,557	167,065	196,829	190,856	162,533	152,615	-6.10%
Japan	146,345	148,459	165,085	188,718	161,112	89,159	-44.70%
China	225,497	202,777	201,585	187,273	158,502	120,480	-24.00%
United Kingdom	55,513	74,417	76,706	63,860	56,602	42,168	-25.50%
Germany	83,118	80,940	82,282	59,813	49,668	61,757	24.30%
Guatemala	56,272	60,605	55,550	53,835	44,595	19,695	-55.80%
France	75,691	71,386	65,244	44,200	36,929	41,097	11.30%
Turkey	25,353	16,896	22,636	27,405	25,137	24,152	-3.90%
Brazil	69,056	47,690	28,962	25,887	23,901	19,561	-18.20%
Taiwan	42,579	21,598	18,590	25,754	21,680	24,853	14.60%
Thailand	7,486	9,126	24,080	25,158	21,643	19,036	-12.00%
Malaysia	19,228	17,841	17,311	23,193	19,024	25,815	35.70%
United Arab Emirates	35,500	43,300	22,074	22,529	21,653	2,923	-86.50%
All Other:	615,166	390,585	214,259	230,377	199,862	155,740	-22.10%
Total	**3,823,936**	**3,763,076**	**3,654,514**	**3,440,770**	**2,912,946**	**2,867,475**	**-1.60%**
Source: U.S. Census Bureau, accessed through USITC Dataweb							

Table 31 – U.S. Domestic Exports of Aluminum Plate, Sheet and Strip By Weight (HTS 7606)							
Year >>	2013	2014	2015	2016	2016 Jan-Oct	2017 Jan-Oct	Change YTD 2016 - 2017
Country	Metric Tons						
Canada	338,547	345,144	371,547	379,670	326,391	299,878	-8.10%
Mexico	295,073	310,147	338,529	318,309	264,429	272,101	2.90%
China	31,080	34,611	33,166	31,179	26,225	20,216	-22.90%
South Korea	21,431	24,496	27,584	27,246	23,211	22,952	-1.10%
Japan	14,839	15,097	17,861	21,815	19,229	9,964	-48.20%
Guatemala	18,297	18,233	18,670	19,631	16,406	6,121	-62.70%
United Kingdom	7,415	10,460	10,955	8,239	7,158	5,886	-17.80%
Germany	10,657	10,670	10,157	7,558	6,288	11,020	75.30%
United Arab Emirates	10,582	12,497	5,358	6,411	6,251	557	-91.10%
France	10,013	10,096	9,627	6,260	5,229	6,194	18.40%
Panama	4,111	4,296	5,061	6,128	4,917	1,675	-65.90%
Saudi Arabia	67,224	38,958	3,796	6,041	4,997	920	-81.60%
Thailand	1,144	1,242	4,656	4,932	4,251	3,575	-15.90%
Taiwan	4,907	3,528	3,174	3,905	3,322	3,603	8.50%
Brazil	13,640	8,955	4,439	3,895	3,579	2,533	-29.20%
All Other:	87,433	58,152	35,616	40,852	36,283	30,401	-16.20%
Total:	936,392	906,583	900,197	892,071	758,166	697,596	-7.99%
Source: U.S. Census Bureau, accessed through USITC Dataweb							

A category of aluminum products that is a significant source of exports for the United States is bars, rods and profiles (HTS 7604) which are most commonly extrusions. Total U.S. exports in these aluminum products were just over one billion dollars in 2016. The export of 82,000 metric tons of these items valued at $233 million to Vietnam in 2016 appears to have been an anomaly.

After increasing significantly in 2016 over 2015 levels, exports of these items were down by a quarter in value in the first ten months of 2017 compared to the same period in 2016; the decline in exports on a weight basis is even greater (42 percent), largely due to the return of exports to Vietnam to typical levels in 2017. Canada and Mexico again account for the bulk of U.S. exports.

Table 32 - U.S. Exports of Aluminum Bars, Rods & Profiles By Value (HTS 7604)							
Year >>	**2013**	**2014**	**2015**	**2016**	**2016 Jan-Oct**	**2017 Jan-Oct**	**Change YTD 2016 - 2017**
Country	**Thousands of Dollars (000)**						
Mexico	344,761	323,471	349,301	345,849	299,349	288,552	-3.60%
Vietnam	635	635	21,690	233,561	233,494	213	-99.90%
Canada	237,966	240,556	228,005	195,781	165,399	183,004	10.60%
United Kingdom	51,666	54,652	46,575	50,349	43,412	38,634	-11.00%
Japan	50,603	41,476	37,466	45,316	38,083	19,235	-49.50%
South Korea	36,569	34,179	35,410	44,307	36,851	32,869	-10.80%
China	29,033	33,187	25,761	20,981	17,129	22,055	28.80%
France	18,482	20,028	20,002	20,548	17,263	20,038	16.10%
Israel	27,598	26,277	14,608	20,171	17,299	19,259	11.30%
Germany	10,437	15,852	16,711	13,083	10,938	5,063	-53.70%
Taiwan	5,080	4,360	7,266	5,822	4,741	5,637	18.90%
Brazil	3,992	3,832	3,271	3,945	3,366	2,337	-30.60%
Turkey	6,340	3,645	5,793	3,881	2,997	3,915	30.60%
Italy	4,085	4,656	3,422	3,716	3,095	5,147	66.30%
Singapore	3,621	3,928	3,724	3,264	2,766	4,058	46.70%
All Other:	46,214	45,228	45,013	38,118	31,361	41,264	31.60%
Total	**877,081**	**855,962**	**864,016**	**1,048,692**	**927,545**	**691,283**	**-25.50%**
Source: U.S. Census Bureau, accessed through USITC Dataweb							

Table 33 – U.S. Domestic Exports of Aluminum Bars, Rods and Profiles By Weight (HTS 7604)							
Year >>	**2013**	**2014**	**2015**	**2016**	**2016 Jan-Oct**	**2017 Jan-Oct**	**Change YTD 2016 - 2017**
Country	**Thousands of Dollars (000)**						
Mexico	70,194	92,274	95,979	89,245	78,209	63,306	-19.10%
Vietnam	119	137	10,689	82,133	82,123	29	-100.00%
Canada	49,690	49,265	46,744	41,215	35,068	37,032	5.60%
United Kingdom	5,492	5,581	4,735	5,100	4,269	4,994	17.00%
Israel	6,604	6,582	3,647	4,972	4,210	4,860	15.40%
South Korea	3,541	3,445	3,281	3,996	3,275	3,417	4.30%
Japan	3,862	3,432	2,722	3,400	2,849	1,424	-50.00%
France	3,587	3,180	3,178	3,153	2,625	2,592	-1.20%
China	3,330	4,113	3,355	2,427	1,921	2,853	48.50%
Taiwan	480	546	881	733	547	911	66.50%
Germany	880	1,056	1,038	656	560	396	-29.20%
Thailand	29	171	747	584	479	753	57.10%
Australia	343	380	434	468	401	359	-10.50%
Singapore	558	577	540	378	305	437	43.20%
Brazil	455	366	327	331	281	200	-29.00%
All other	7,614	7,396	5,300	3,863	3,154	3,761	19.30%
Total	156,777	178,499	183,597	242,655	220,276	127,323	-42.20%
Source: U.S. Census Bureau, accessed through USITC Dataweb							

U.S. exports of aluminum castings and forgings, a relatively small category, were steady for the period 2013 to 2015, before rising in 2016 (*see* table below). Again, this increase in exports is attributed to an anomalous surge in exports to Vietnam. Data for the first ten months of 2017 show increased exports on a weight basis.

Table 34 - U.S. Exports of Aluminum Castings and Forging by Weight (HTS 7616.99.50.60; 7616.99.50.70; 7616.99.51.60; 7616.99.51.70)							
Year >>	**2013**	**2014**	**2015**	**2016**	**2016 Jan-Oct**	**2017 Jan-Oct**	**Change YTD 2016 - 2017**
Country	**Metric Tons**						
Mexico	2,294	2,141	2,479	3,386	2,674	6,469	141.90%
Canada	4,850	3,795	3,402	3,016	2,563	569	-77.80%
France	1,614	1,929	1,921	1,720	1,445	1,250	-13.50%
Japan	594	829	1,231	1,363	1,124	1,663	47.90%
China	1,656	1,551	1,217	1,254	998	3,389	239.70%
Italy	1,647	1,686	1,240	1,093	913	805	-11.80%
United Kingdom	770	787	899	1,083	881	1,066	21.00%
Germany	702	500	435	912	659	1,348	104.50%
Brazil	850	790	601	690	550	403	-26.80%
South Korea	922	959	646	578	456	682	49.50%
Turkey	271	191	272	274	192	189	-1.40%
Spain	351	276	269	253	222	142	-36.30%
Singapore	327	264	255	208	175	193	9.90%
Malaysia	472	605	430	170	150	131	-12.50%
Poland	218	203	191	151	138	112	-18.70%
All Other	2,738	2,207	1,652	1,381	1,164	1,799	-18.84%
Total	20,275	18,713	17,140	17,533	14,304	20,209	54.55%
Source: U.S. Census Bureau, accessed through USITC Dataweb							

G. High Import to Export Ratio

Overall, for the aluminum product categories subject to this investigation (HTS 7601, 7604-7609), 7616.99.51.60; 7616.99.51.70), the United States ran a trade deficit of $7.1 billion in 2016. These data suggest that the trade deficit in aluminum will be larger in 2017.

The table below shows the U.S. trade balance by major trading partners. The U.S. runs substantial trade deficits in aluminum products with Canada, China, Russia, the United Arab Emirates and Bahrain, and the deficit is growing. For the first 10 months of 2017, the total trade deficit is nearly double what it was for the

same period in 2016. The U.S. runs a large trade surplus with Mexico in aluminum products – about $2.1 billion in 2016, and a smaller trade surplus with the United Kingdom, Japan and South Korea.

Table 35 - U.S. Trade Balance with Selected Countries All Section 232 Aluminum Categories (HTS 7616.99.50.60; 7616.99.50.70; 7616.99.51.60; 7616.99.51.70)						
Year >>	**2013**	**2014**	**2015**	**2016**	**2016 Jan-Oct**	**2017 Jan-Oct**
Country	**Thousands of Dollars (000)**					
Mexico	2,371,834	2,455,539	2,387,534	2,173,122	1,826,582	1,942,402
Vietnam	(10,732)	(4,049)	(9,316)	283,067	293,382	(70,256)
Hong Kong	1,313	4,924	(479)	3,678	4,968	(55,437)
South Korea	119,143	79,682	129,516	154,779	128,825	126,470
Japan	50,939	42,402	90,285	135,567	116,124	31,904
United Kingdom	104,149	148,915	141,343	130,094	114,321	101,988
Venezuela	(91,415)	(196,083)	(113,191)	(110,262)	(77,358)	(158,447)
Qatar	(204,933)	(199,549)	(222,726)	(299,067)	(248,714)	(268,725)
Argentina	(210,147)	(166,711)	(191,493)	(320,816)	(268,540)	(365,281)
Bahrain	(163,748)	(245,600)	(282,206)	(397,677)	(321,112)	(496,891)
United Arab Emirates	(537,770)	(569,045)	(631,987)	(996,698)	(775,815)	(1,156,558)
Russia	(526,139)	(796,127)	(713,530)	(1,346,567)	(1,113,618)	(1,298,504)
China	(1,298,588)	(1,480,191)	(1,779,568)	(1,641,203)	(1,358,954)	(1,757,882)
Canada	(4,168,369)	(4,394,953)	(4,029,080)	(3,802,964)	(3,069,832)	(4,189,266)
Overall Total	**(5,081,162)**	**(6,233,445)**	**(6,589,138)**	**(7,177,672)**	**(5,701,277)**	**(9,268,602)**
Source: U.S. Census Bureau, accessed through USITC Dataweb						

The U.S. runs a substantial trade deficit with China, totaling $1.6 billion in 2016; the trade deficit with China in aluminum categories. Unlike the other countries with which the U.S. runs a trade deficit in aluminum (e.g., Canada, Russia, UAE, Bahrain), the imports from China are not in the form of primary aluminum but rather downstream products.

Included in the table is the U.S. trade balance with Hong Kong and Vietnam; while not large in an absolute sense, the trade balance with these countries is volatile from year to year, reflective in unusual trade patterns that may indicate transshipments.

By industry sector, the U.S. trade balance varies: there is a trade surplus in a number of sectors such as hollow profiles and plate, sheet and strip. However, these surpluses are by far overshadowed by the categories in which the U.S. runs a trade deficit – primary aluminum and aluminum powders, foil, and wire.

Table 36 - U.S. Trade Balance by Aluminum Product Category
(HTS 7601; 7604--7609)

Year >>	2013	2014	2015	2016	2016 YTD Jan-Oct	2017 Jan-Oct
Type of Aluminum Product By HTS Code	Thousands of Dollars (000)					
760110 ALUMINUM, NOT ALLOYED, UNWROUGHT	(3,213,230)	(3,160,851)	(2,809,400)	(3,871,305)	(3,015,136)	(4,649,776)
760120 ALUMINUM ALLOYS, UNWROUGHT	(2,672,499)	(3,468,086)	(3,687,386)	(3,398,508)	(2,877,033)	(3,411,554)
760410 ALUMINUM BARS, RODS AND PROFILES, NOT ALLOYED	2,881	31,375	(11,267)	(12,994)	(10,464)	(20,872)
760421 ALUMINUM ALLOY HOLLOW PROFILES	(72,685)	(136,690)	(152,801)	45,720	78,021	(196,575)
760429 ALUMINUM ALLOY BARS, RODS AND PROFILES, OTHER THAN HOLLOW PROFILES	303,343	230,762	223,547	216,147	189,128	68,372
760511 ALUMINUM WIRE OF NONALLOYED ALUMINUM, WITH A MAXIMUM CROSS SECTIONAL DIMENSION OF OVER 7 MM	(347,680)	(333,949)	(308,439)	(418,253)	(339,598)	(504,712)
760519 ALUMINUM WIRE OF NONALLOYED ALUMINUM, WITH A MAXIMUM CROSS SECTIONAL DIMENSION OF 7 MM OR LESS	17,266	10,905	2,872	(894)	(483)	(2,429)
760521 ALUMINUM ALLOY WIRE, WITH A MAXIMUM CROSS SECTIONAL DIMENSION OF OVER 7 MM	(109,490)	(118,502)	(60,143)	(62,610)	(54,856)	(52,755)
760529 ALUMINUM ALLOY WIRE, WITH A MAXIMUM CROSS SECTIONAL DIMENSION OF 7 MM OR LESS	15,397	13,217	19,168	18,280	16,432	12,948

Table 36 - U.S. Trade Balance by Aluminum Product Category - *Continued* (HTS 7601; 7604--7609)						
760611 ALUMINUM NONALLOYED RECTANGULAR (INCLUDING SQUARE) PLATES, SHEETS AND STRIP, OVER 0.2 MM THICK	(36,164)	(32,713)	(45,728)	43,341	32,500	39,153
760612 ALUMINUM ALLOY RECTANGULAR (INCLUDING SQUARE) PLATES, SHEETS AND STRIP, OVER 0.2 MM THICK	1,694,642	1,369,395	847,662	851,659	754,432	163,165
760691 ALUMINUM NONALLOYED PLATES, SHEETS OR STRIP, OVER 0.2 MM THICK, NESOI (OTHER THAN RECTANGULAR OR SQUARE SHAPES)	18,787	45,760	24,525	33,686	26,153	40,176
760692 ALUMINUM ALLOY PLATES, SHEETS OR STRIP, OVER 0.2 MM THICK, NESOI (OTHER THAN RECTANGULAR SQUARE SHAPES)	67,533	25,085	27,104	(10,582)	(3,891)	(8,675)
760711 ALUMINUM FOIL, NOT OVER 0.2 MM THICK, NOT BACKED, ROLLED BUT NOT FURTHER WORKED	(205,299)	(301,531)	(325,798)	(321,609)	(265,163)	(342,571)
760719 ALUMINUM FOIL, NOT OVER 0.2 MM THICK, NOT BACKED, NESOI	(122,812)	(104,362)	(33,748)	(33,372)	(25,138)	(43,718)
760720 ALUMINUM FOIL, NOT OVER 0.2 MM THICK, BACKED	(59,875)	(63,867)	(97,638)	(95,487)	(80,163)	(90,843)
760810 ALUMINUM TUBES AND PIPES, NOT ALLOYED	37,855	37,627	38,987	35,451	30,480	47,665
760820 ALUMINUM ALLOY TUBES AND PIPES	76,816	96,203	73,034	78,710	69,350	64,968
760900 ALUMINUM TUBE OR PIPE FITTINGS (INCLUDING COUPLINGS, ELBOWS, AND SLEEVES)	41,302	57,883	71,792	66,505	55,327	49,385
OVERALL TOTAL	(4,563,912)	(5,802,340)	(6,203,656)	(6,836,115)	(5,420,104)	(8,838,649)
Source: U.S. Census Bureau, accessed through USITC Dataweb						

The U.S. trade deficit is particularly pronounced in the primary (unwrought) aluminum industry segment. The deficit for this category reached nearly $7 billion in 2016, and data for the initial six months indicate that it will be even greater in 2017.

The United States exported very little unwrought aluminum, but imported large amounts from Canada, Russia and other countries. On a weight basis, the U.S. deficit was nearly 4 million metric tons in 2016.

Table 37 - U.S. Trade Balance with Selected Countries Unwrought Aluminum (HTS 7601)

Year >>	2013	2014	2015	2016	2016 Jan-Jun	2017 Jan-Jun
Country	**Thousands of Dollars (000)**					
Mexico	756,707	791,828	741,779	653,537	337,023	368,797
Saudi Arabia	(548)	(36,695)	(167,235)	(98,931)	(51,604)	(27,031)
Venezuela	(22,768)	(118,071)	(85,208)	(103,022)	(35,662)	(90,060)
Bahrain	(68,317)	(125,142)	(167,568)	(195,003)	(108,432)	(116,343)
Argentina	(195,002)	(152,932)	(184,196)	(297,358)	(128,448)	(165,873)
Qatar	(208,908)	(202,328)	(224,177)	(300,643)	(143,701)	(159,024)
United Arab Emirates	(579,762)	(620,648)	(661,738)	(1,026,925)	(519,748)	(783,000)
Russia	(424,889)	(693,426)	(643,647)	(1,234,395)	(632,628)	(760,662)
Canada	(4,151,656)	(4,408,487)	(4,360,271)	(4,016,914)	(1,931,387)	(2,633,196)
OVERALL TRADE BALANCE	**(5,117,050)**	**(5,876,301)**	**(6,058,537)**	**(6,982,268)**	**(3,374,127)**	**(4,809,136)**

Source: U.S. Census Bureau, accessed through USITC Dataweb

In the area of semi-finished aluminum products (including bars, rods, plates, sheet and strip), the United States ran a trade surplus in 2016 of $2.2 billion. However, there are certain countries with which the U.S. ran a trade deficit, including China, South Africa, Germany and Bahrain.

The trade deficit with China in particular is substantial and growing in 2017 over 2016 levels. Countries with which the United States ran a trade surplus in are NAFTA partners Mexico and Canada, as well as South Korea, Japan and the United Kingdom.

Table 38- U.S. Trade Balance with Selected Countries Aluminum Semi-Manufactures including Bars, Rods, Plate, Sheet & Tubes (HTS 7604, 7606, 7608, 7609)						
Year >>	**2013**	**2014**	**2015**	**2016**	**2016 Jan-Jun**	**2017 Jan-Jun**
Country	**U.S. Trade Deficit - Thousands of Dollars**					
China	(243,021)	(426,807)	(677,567)	(619,141)	(300,537)	(490,221)
South Africa	(188,017)	(177,448)	(151,889)	(160,615)	(71,559)	(74,333)
Germany	(200,718)	($101,437)	(150,262)	(145,658)	(83,399)	(58,513)
Bahrain	(73,247)	(91,167)	(101,627)	(133,653)	(70,843)	(72,741)
Austria	(83,404)	(105,111)	(127,130)	(127,604)	(65,330)	(61,655)
Indonesia	(153,022)	(129,779)	(177,619)	(80,308)	(30,402)	(78,366)
Country	**U.S. Trade Surplus – Thousands of Dollars**					
Saudi Arabia	226,016	137,777	27,080	28,617	11,847	1,232
United Kingdom	39,260	58,818	62,923	50,344	28,176	20,768
Guatemala	56,712	61,629	56,382	54,149	25,616	11,639
Japan	108,006	85,411	57,297	80,283	38,800	6,402
South Korea	107,709	93,995	142,462	157,350	80,959	85,135
Canada	831,265	812,338	717,708	679,807	346,321	363,464
Vietnam	(3,870)	8,222	6,229	1,182,487	230,308	(19,718)
Mexico	1,272,233	1,346,203	1,440,162	1,343,950	678,883	708,834
OVERALL TRADE BALANCE	**2,031,686**	**1,680,024**	**1,086,855**	**2,234,466**	**783,431**	**198,001**
Source: Source: U.S. Census Bureau, accessed through USITC Dataweb						

H. Impact of Imports on the Welfare of the U.S. Aluminum Industry

1. Declining Employment

The table below presents a snapshot of direct employment in the U.S. aluminum industry, by sector, based on data collected for the Aluminum Association. The loss of jobs in the primary aluminum sector has been precipitous between 2013 and 2016, falling 58 percent as several smelters were either permanently shut down or temporarily idled.

Other (older) data from the association indicated that in 2010, employment in the Alumina Refining/Primary Aluminum sector totaled 21,600; employment in that sector declined by 75 percent in just six years. Employment in secondary production was 6,400 in 2010, so that segment of the industry has nearly doubled in employment by 2013, but has not increased substantially since then.

Employment in the other segments of industry has seen moderate growth over the past three years as demand for aluminum has grown, with aluminum foundries and manufacturers of semi-finished goods such as plates, sheets, and extrusions showing the strongest growth (and also accounting for the largest level of employment). Data from 2010 found that employment in "semi-fabrication" facilities was 101,000, and in Service Centers, 27,000.

Table 39 – U.S. Aluminum Industry Direct Jobs by Sector			
INDUSTRY SECTOR	**2013**	**2016**	**% Change 2013-2016**
Alumina Refining/Primary Aluminum	12,787	5,379	-58%
Secondary Production/Alloying	11,538	11,747	+2%
Sheet/Plate/Foil/Extrusion/Coatings	62,465	67,155	+8%
Foundries	36,484	41,552	+14%
Forgings	10,328	10,442	+1%
Metal Service Centers	23,142	24,633	+6%
TOTAL	**156,744**	**160,888**	**+3%**
Source: Aluminum Association			

Information on employment in the domestic aluminum industry is also available from the Bureau of the Census' Annual Survey of Manufactures, which includes data on the Alumina and Aluminum Production and Processing industry (North American Industry Classification System (NAICS # 33131). The table below presents employment data from the Annual Survey of Manufactures for 2013-2015, the latest year for which data are available. The employment data, too, show declining employment in the primary aluminum sector between 2013 and 2015, but do not reflect the jobs lost in 2016 as additional smelters closed. These data also show relatively stable/slightly growing employment in other industry sectors.

Modern aluminum production—particularly production of high-purity aluminum needed for critical infrastructure and military applications – is a complex and technical process. It requires a trained, skilled workforce that in some cases requires a decade or more of experience. As smelting facilities close,

the loss of this skill-base is eroding and the workforce will become increasingly difficult to bring back.

While the primary aluminum industry sector has seen dramatic job losses in recent years, the downstream industry is likely to suffer as well in the future as foreign aluminum overcapacity drives into the domestic value-added industry sectors. This is already happening as evidenced by growing imports of aluminum semi-manufactured products.

Table 40–Employment in Aluminum Industry, NAICS Based

NAICS #	Sector Description	2013	2014	2015
33131	Alumina & Aluminum Production and Processing (All Subsectors Combined)	56,381	54,953	56,381
331313	Alumina & Primary Aluminum Production	8,652	7,038	7,816
331314	Secondary Smelting & Alloying of Aluminum	5,672	5,560	6,174
331315	Aluminum Sheet, Plate & Foil Manufacturing	17,799	17,936	18,589
331318	Aluminum Rolling, Drawing & Extruding	24,258	24,419	24,900
NAICS = North American Industry Classification System, www.census.gov				
Source: Bureau of the Census, Annual Survey of Manufactures				

2. Poor Financial Status of the U.S. Aluminum Industry

Upstream Industry Sector

Low global aluminum prices and soaring imports due to overcapacity in the aluminum sector have damaged U.S. aluminum companies. *See* Appendix E for more information on global excess aluminum production. High costs for electricity are also a major factor affecting the U.S. aluminum industry, which is energy-intensive. As a result of adverse market conditions, in 2017, there are only two major players in remaining the domestic primary aluminum industry: Alcoa and Century Aluminum. Three other companies have declared bankruptcy in recent years and no longer have any operating aluminum smelters in the United States.

Noranda Aluminum (a Canadian company with U.S. smelting operations) filed for Chapter 11 bankruptcy in February 2016, citing high power prices and low prices for aluminum and the bauxite from its mine in Jamaica. Its New Madrid, Missouri smelter was shut down in March 2016. The facility was recently

purchased by ARG International, a Swiss holding company, but its future as an aluminum smelter (now known as Magnitude 7 Metals) is uncertain.[60]

Another former participant in the primary U.S. aluminum industry, Ormet, declared bankruptcy and sold its shuttered aluminum plant to a land developer in 2014. Ormet cited lower aluminum prices, Chinese competition, and high energy costs as the reasons for its financial problems.[61] One more casualty of poor market conditions was Columbia Falls Aluminum Company of Montana (owned by Glencore AG of Switzerland), which permanently closed and demolished its plant facilities in 2015; its smelter had been mothballed since 2009.[62]

Financial performance of upstream aluminum companies was particularly poor between 2013 and 2016, when aluminum prices began to fall sharply. Chinese production of aluminum soared, and imports into the United States surged. The three publicly traded companies posted negative net incomes for much of those years. Alcoa and Noranda operated at a loss in three of the five years, including the two most recent years. Century Aluminum only had positive net income in one of the five years (2014). In 2016, the three remaining primary aluminum companies reported operating losses totaling $912 million. *See* the Table below.

While the two smaller aluminum manufactures posted relatively stable sales/revenue during the period, the biggest player, Alcoa, saw sales drop drastically between 2014 and 2015. That trend continued in 2016. Over the past several years, Alcoa attempted to adjust to the market realities facing the aluminum sector by shutting down or selling high cost upstream assets and investing in assets that produce value added products. In 2015, Alcoa announced planned production curtailments of 503,000 metric tons of aluminum and 1.2 million metric tons of

[60] http://www.reuters.com/article/us-bankruptcy-noranda-aluminum-idUSKCN1212T7

[61] http://www.peoplesworld.org/article/shutdown-of-ohio-aluminum-giant-ormet-appears-final/

[62] http://www.dailyinterlake.com/archive/article-a06557e8-c1bc-11e4-ab8c-d7b2b1bc3deb.html

alumina to ensure continued competitiveness amid deteriorating market conditions.[63]

As part of this strategy, in 2016, after 128 years of operating as a vertically integrated aluminum company, Alcoa split the company into two separate entities. Alcoa Corp. retained the upstream commodity assets including primary aluminum smelters, bauxite mines, alumina refineries, and power plants. Arconic, Inc. owns the downstream, value-added fabrication businesses, including rolling mills and associated secondary aluminum capacity, as well as specialty metal, aerospace and automobile product assets.

Financial analysts are bullish on the restructured Alcoa, predicting its sales revenues to grow by 25 percent in 2017 and by single digits in 2018. This optimism is predicated on improving market conditions in alumina and aluminum sectors based on strong demand and higher aluminum metal prices. However, the majority of Alcoa's production operations are no longer in the United States, and its financial success is based on its global operations in bauxite, alumina, aluminum smelting, and limited rolling and casting.

The domestic upstream industry showed improved financial performance in the first quarter of 2017, largely due to improved market pricing of aluminum.

Alcoa's First Quarter 2017 results (its first full quarter since spinning off its downstream businesses) showed a positive Net Income of $225 million ($1.21/share); Earnings Before Interest, Taxes, Depreciation and Amortization (EBITDA) was $533 million, up 59 percent due to higher alumina and aluminum pricing. The company expects its full year 2017 adjusted EBITDA of between $2.1 and $2.3 billion.

Century Aluminum Company (CENX), too, reported improved First Quarter 2017 results, although it still posted a net income loss. The company had an Adjusted EBITDA of $22 million 1Q17 vs. $12 in 4Q16. The company's net loss in 1Q17 was $5 million, compared to $12 million loss in 4Q16.

[63] https://www.alcoa.com/global/en/who-we-are/history/default.asp

As a whole, the three primary aluminum companies together had EBITDA of $2.273 billion in 2012, but this figure decreased to $1.114 billion for 2016, a 50 percent decline.

While the U.S. industry is seeing an uptick in demand and better pricing, it is not clear that this can be maintained given the rise of imported aluminum products, which are steadily eroding the customer base for domestic production. A sustained improvement in profitability over many quarters is needed for companies to stabilize and recover from financial losses suffered over the past 10 years.

Table 41 – Aluminum Smelter Company Key Financial Statistics

Trading Symbol	Company	2012	2013	2014	2015	2016
Sales Revenue						
AA	ALCOA	$26.68B	$23.06B	$23.88B	$11.22B	$9.33B
CENEX	CENTURY	$1.27B	$1.45B	$1.93B	$1.95B	$1.32B
NORNQ	NORANDA	$1.56B	$1.39B	$1.34B	$1.36B	$1.23B
NET INCOME						
AA	ALCOA	$191M	($2.29)B	$268M	($868)M	($400)M
CENX	CENTURY	($36.61)M	($40.31)M	$103.28M	($47.73)M	($252.42)M
NORNQ	NORANDA	$140.9M	$49.5M	($47.6)M	($26.6)M	($259.6)M
EBITDA						
AA	ALCOA	$2.00B	$2.57B	$3.53B	$1.77B	$1.10B
CENX	CENTURY	$53.99M	$37.06M	$214.92M	$66.54M	$29.8M
NORNQ	NORANDA	$219.6M	$133.1M	$83.2M	$107.4M	($15.5)M
B = Billions of Dollars; M = Millions of Dollars						
Source: Company Financial Statements						

Financial Performance of Downstream Aluminum Companies

The downstream sector as a whole experienced modest job growth across a range of industrial sectors between 2013 and 2016 based on increased demand for their products (such as the growing automotive sector). Downstream manufacturers of aluminum products have made investments in capital equipment to improve their manufacturing capabilities. According to the Aluminum Association, their member companies have invested $2.3 billion since 2013 in facilities to produce aluminum products – including aluminum sheet for automotive applications

To date, the downstream sector has largely remained profitable by shifting production to markets not yet affected imports. Some formerly vertically-integrated companies have shifted to production of higher value-added products (e.g., Arconic, Kaiser). Among the sectors hardest hit by soaring aluminum imports is the U.S. foil industry, which has all but disappeared. Alpha Aluminum closed its North Carolina foil facility in July, 2015 and Novelis idled its Terre Haute, IN foil plant in April, 2014.

While the impact of imports on the downstream industry sector has so far been limited to certain product categories, the USITC noted that Chinese firms are striving to enter the more profitable automotive and aerospace markets.[64]

3. Research and Development (R&D) Expenditures

Research and development in the aluminum sector is important – it has made possible new applications for this material and has enabled more effective manufacturing processes. Because aluminum is lightweight, resistant to corrosion, high strength and recyclable, it is an essential material for modern economies. Exploiting the material's properties required focused R&D.

Some areas of research that are important include reducing the high energy usage in smelting (which accounts for an estimated 30 to 40 percent of the cost of production) and reducing the undesirable by-products of smelting, such as pollution. R&D is also important to meet regulatory requirements; and developing new markets, processes, and products for various market sectors, including automotive, aerospace, packaging, and construction.

Arconic (formerly a part of Alcoa) is a leader in research and development in the aluminum industry. After establishing its first facility dedicated to improving production processes and finding new applications for aluminum in 1930, Alcoa established the Alcoa Technical Center outside of Pittsburgh in 1965 as a center for innovation. A success story of innovation, in 2005 Alcoa (now Arconic) signed a $1.1 billion, 10-year agreement with jet engine maker Pratt & Whitney to supply

[64] USITC Report, p. 148.

key engine parts. This supply pact included forging for the first-ever aluminum fan blades for jet engines.

As recently as 2015, Alcoa undertook a $60 million expansion of its Technical Center to pursue the development of advanced 3D printing materials and manufacturing processes to meet increasing demand for complex, high-performance 3D-printed parts for aerospace, automotive, medical, building and construction and other high-growth markets.

Of the three remaining companies with U.S. smelting operations in 2016, Alcoa is the only company to report spending on Research and Development over the past five years in its financial statements; Century Aluminum and Noranda reported zero spending on R&D since 2012.

Despite its long history of innovation in the aluminum industry, poor market conditions and financial health have apparently significantly affected both Alcoa's and Arconic's research and development efforts. Alcoa's R&D expenditures plunged from $95 million in 2014 to $33 million in 2016.[65] In the first quarter of 2017, Alcoa's R&D spending was $7 million (an annualized $28 million), a reduction attributable to the creation of Arconic as a completely separate business, and declining aluminum earnings.

Most of Alcoa's R&D assets went to Arconic in the split. In 2016, Alcoa eliminated 90 positions at its technical center as part of an efficiency initiative; this followed a previous elimination of 50 workers in 2015. Alcoa is leasing a single R&D building at Arconic's New Kensington, PA R&D campus (previously Alcoa's R&D complex) for three years. Arconic reported R&D expenditures of $100 million for 2015, $132 million for 2016, and the company projects spending of [redacted] in 2017.[66]

Limitations on the funding of research and development caused by sliding revenues could have serious implications for development of next-generation

[65] Alcoa Corp., 2016 10-K Securities and Exchange Commission financial report, Statement of Consolidated Operations.

[66] Arconic R&D figures are extrapolated from Alcoa's R&D program prior to Arconic's formation. Anne McInerney, Director of Federal Affairs, Arconic.

aluminum-based products, including those required for U.S. national security. U.S. defense programs continue to rely on strong, lightweight aluminum for use in engine parts and structural components for aircraft, military vehicles, equipment, armor and many other applications. Aluminum is a critical part of any armor solution because it has better blast absorption characteristics. More than 90 percent of all alloys currently used in the aerospace industry were developed through Alcoa's research.

While downstream aluminum companies continue to conduct R&D in specific areas, the absence of fully integrated aluminum companies in the United States may be an inhibiting factor in development of next generation aluminum technologies.

4. Capital Expenditures

According to the Aluminum Association, since 2013 their member companies have invested $2.3 billion in facilities to produce downstream aluminum products. The USITC's survey of downstream aluminum companies indicated that capital investment was on the increase, rising by 65 percent from 2011 to 2015; much of this investment was by companies involved in the plate, sheet and strip industry segment.[67]

In the secondary aluminum industry, the ITC's survey found an average of $291 million per year of investments, with merchant producers accounting for 60 percent of the investments. There was also a significant greenfield construction by a foreign firm (Shandong Nanshan Aluminum Co.), which built a captive secondary aluminum/extrusion mill in Lafayette, IN.[68] Foreign investors that increased capacity through capital investment include Toyota Tsusho America, which purchased U.S.-based merchant producer Bermco in 2015.

In the downstream wrought aluminum industry, the US ITC survey indicated that capital spending rose 65 percent between 2011 and 2015, to $995.3 million.

[67] USITC Report, p. 146-147

[68] USITC Report, p. 141-142

Two thirds of this investment was by the flat rolled plate sector, which is due to the fact that the sector is experiencing demand growth and the high costs associated with rolling mill equipment compared to extrusion presses.[69]

Information on capital expenditures by the U.S. aluminum industry is available through the Bureau of Census' Annual Survey of Manufactures (NAICS #33131 – Alumina and Aluminum Production and Processing) and is presented in the Table below.

Table 42 –Total Capital Expenditures by Aluminum Industry (Millions of Dollars)

NAICS #	Sector Description	2013	2014	2015
33131	Alumina& Aluminum Production and Processing (All Subsectors)	$1,145	$1,037	$1,285
331313	Alumina & Primary Aluminum Production	$164	$156	$166
331314	Secondary Smelting & Alloying of Aluminum	$110	$109	$139
331315	Aluminum Sheet, Plate & Foil Manufacturing	$615	$521	$789
331318	Aluminum Rolling, Drawing & Extruding	$256	$251	$191
NAICS = North American Industry Classification System, www.census.gov				
Source: Bureau of the Census, Annual Survey of Manufactures				

These data include the total new and used capital expenditures reported by establishments in operation, including any known plants under construction, permanent additions, and major alterations to manufacturing and mining establishments, and new and used machinery and equipment. The table above shows that capital expenditures by the industry as a whole have been largely consistent over the three-year period. Capital investment by the primary and secondary aluminum smelting sectors account for a relatively small percentage of the total. The majority of capital expenditures are made by establishments in the downstream sector of the industry. As noted previously, 2015 is the most recent year for which this information is available; data for 2016 would likely show a decline in capital expenditures by the primary aluminum sector.

[69] USITC Report, p. 147

The USITC report on the Competitive Conditions Affecting the U.S. Aluminum Industry noted that several U.S. firms planned upgrades to smelting operations, but did not proceed due to financial considerations and market conditions. For example, in 2012 Alcoa announced plans to replace antiquated pot lines at its Massena East smelter, but cancelled the modernization plan in 2015--and instead shut down the facility. Noranda also planned to upgrade its New Madrid, MO smelter, prior to the company declaring bankruptcy in 2016.[70]

5. Aluminum Prices

Aluminum is an exchange-traded commodity and global market prices for aluminum are determined on the basis of global supply and demand. The London Metal Exchange (LME) is the world's largest exchange for base and other metals, including aluminum. In Asia, the Shanghai Futures Exchange (SHFE) is a major commodity exchange for unwrought aluminum contracts. Aluminum contracts for the United States and Europe are traded on the LME. Aluminum prices in China are set on the SHFE. The LME price of aluminum is used as the global reference point both in the metal industry and in the investment community.

The price chart for aluminum on the LME illustrates the price weakness seen over recent years. The fundamental reason for the price drop is chronic oversupply, despite healthy growth in global demand for aluminum and stable costs of production. In fact, demand has increased by over nine times over the past decade and a half.

The oversupply situation in the global market is primarily caused by developments in the Chinese aluminum industry. Chinese consumption rose from 3.2 million metric tons in 2001 to 29.2 million metric tons in 2015. At the same time, production in the country increased by almost 14 times.

In 2016 the world produced a total of 57.6 million tons of aluminum of which 31 million (54 percent) came from China. The result is that in 2015, there were huge stockpiles of aluminum in the world with nearly 3 million tons on the London Metal Exchange, the world's primary market for trading in nonferrous

[70] USITC Report, p. 137

metals. Since then, there has been a drawdown in global LME warehouse inventories to just over 2 million tons.

The figures below show prices on the London Metals Exchange for aluminum. First, the recession of 2008 is readily evident in the figure. After bottoming out in 2008-2009, the price of aluminum recovered, only to fall dramatically between 2011 and 2016 in response to global oversupply. The price drop for aluminum was particularly dramatic in 2015. In November, 2014 the LME price for aluminum was as high as $2,100 per metric ton; one year later the price was less than $1,500 per metric ton. Aluminum prices on the LME fell 18.6 percent in 2015 reaching a six-year low at $1,475 per ton, or an average of 75 cents per pound, and less than 73 cents per pound on average for 2016.

The sharp drop in aluminum prices had a devastating effect on the U.S. industry—a number of U.S. smelters were forced to either temporarily or permanently halt operations during 2014-2016; two primary aluminum producers declared bankruptcy.

Figure 8. Price of Primary Aluminum on the London Metals Exchange

(Dollars per Metric Ton), 1998-2016

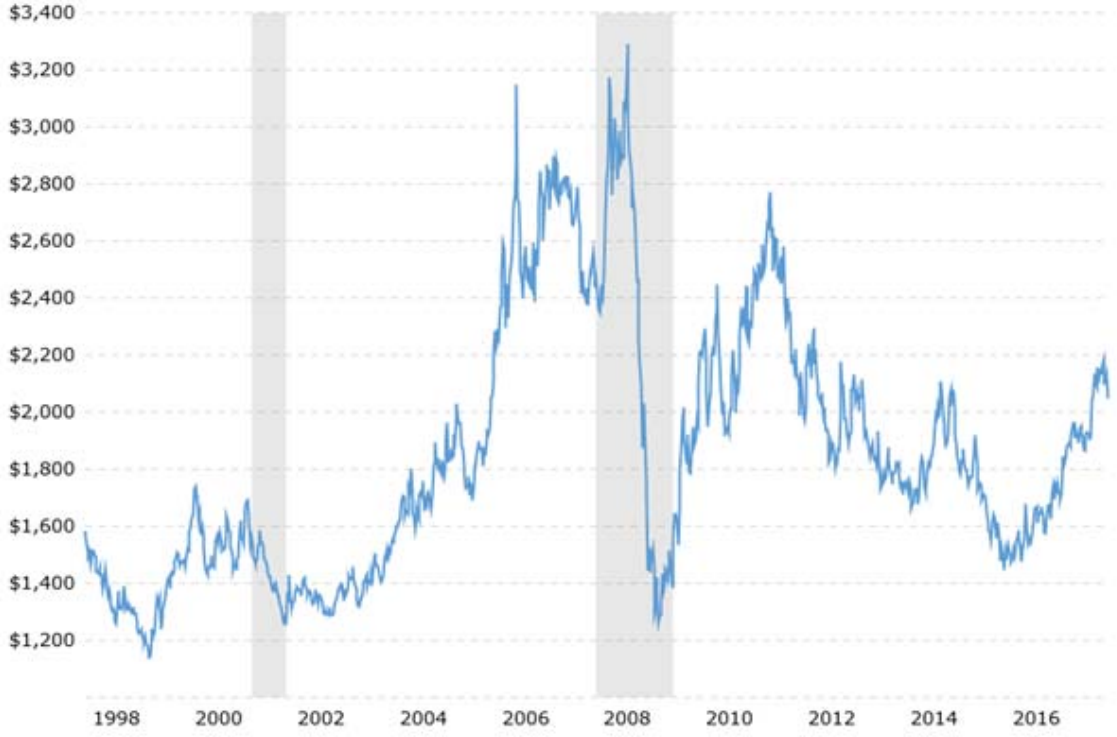
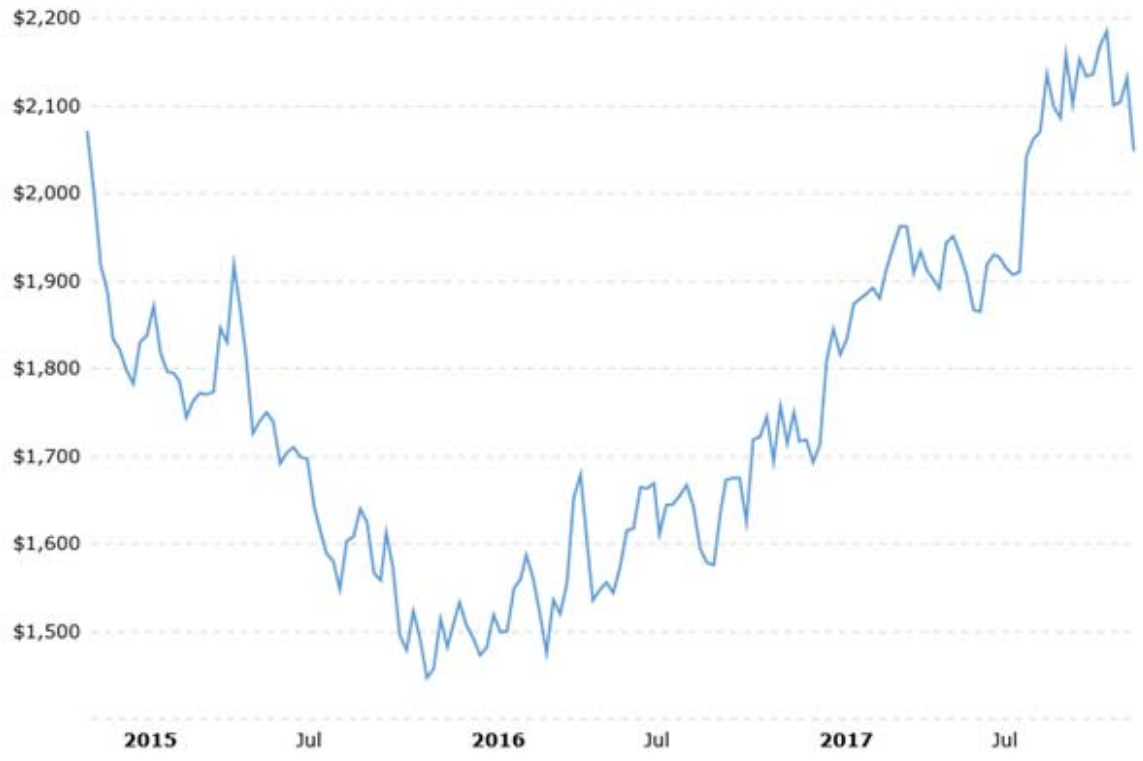


Figure 9 - Price of Primary Aluminum on the London Metals Exchange
(Dollars per Metric Ton), January 2015-November 27, 2017



In recent months, the LME price for aluminum has rebounded to more typical levels, and reached a five-year high in October, 2017 at nearly $2,200 per ton. Despite the improvement in the market, U.S. smelter operators have no confidence that prices will remain at or above current levels that are needed in order for them to operate profitably.

Low aluminum prices, rising inventories and continued supply growth in China and other countries have caused many producers to close or curtail their U.S. smelting operations. While aluminum prices are beginning to rise from their historic low, it is not clear how readily the U.S. primary aluminum industry will rebound. Indeed, global aluminum production capacity continues to expand, which may mean that the increase in aluminum prices seen thus far in 2017 may not be sustained. While there has been a modest reduction in Chinese aluminum production in recent months, this trend, too, may be temporary. According to analysts at Bloomberg Intelligence, despite cuts to China's aluminum capacity

earlier in 2017, Chinese aluminum makers added 4 million metric tons net capacity in 2017 and may add an additional 3 million metric tons in 2018.[71]

[71] https://www.bloomberg.com/professional/blog/aluminum-landscape-may-get-interesting-winter-passed/

VII. CONCLUSION

Based on these findings, the Secretary of Commerce concludes that the present quantities and circumstance of aluminum imports (wrought and unwrought) are "weakening our internal economy" and threaten to impair the national security as defined in Section 232. The Secretary has determined that to remove the threat of impairment, it is necessary to reduce imports to a level that will provide the opportunity for U.S. primary aluminum producers to restart idled capacity. This will increase and stabilize U.S. production of aluminum at the minimal level needed to meet current and future national security needs. If no action is taken, the United States is in danger of losing the capability to smelt primary aluminum altogether.

A quota or tariff on downstream products is also necessary because global overcapacity, coupled with industrial policies that promote exports of downstream products, have had a negative impact on the U.S. primary aluminum industry through reduced demand for inputs from downstream companies, as well as directly on the downstream companies which face increased import penetration in many aluminum product sectors.

The continued rise in levels of imports of foreign aluminum threatens to impair the national security by placing the U.S. aluminum industry at substantial risk of losing the capacity to produce aluminum and aluminum products needed to support critical infrastructure and national defense.

A major factor contributing to the decline in domestic aluminum production and loss of domestic production capacity has been excess production and capacity in China, which now accounts for over half of global aluminum production. This is despite the fact that China has no natural competitive advantage for aluminum production. Chinese excess production, unresponsive to market forces, flooded world markets and caused a steep decline in global aluminum prices between 2014 and 2016. During this time of low prices, a number of U.S. aluminum smelters were forced to permanently shut down, while others were temporarily idled or curtailed their production.

Although global aluminum prices have regained lost ground in recent months, the damage to U.S. aluminum production capability was significant and irreversible. U.S. ability to smelt primary aluminum, including high-purity aluminum needed for the most sophisticated commercial and defense applications, has been reduced to minimal levels. Imports of primary aluminum now account for nearly 90 percent of domestic consumption. Imports of downstream aluminum products are surging as well, up 30 percent in 2017 over 2016 levels.

Since defense and critical infrastructure requirements alone are not sufficient to support a robust aluminum industry, U.S. primary and downstream aluminum producers must be financially viable and competitive in commercial markets to be able to produce the needed output. In fact, it is the ability to quickly shift production capacity used for commercial products to defense and critical infrastructure production that provides the United States a surge capability that is vital to national security, especially in an unexpected or extended conflict or national emergency. It is that capability that is now at serious risk.

In addition, it is in the interest of U.S. national security and overall economic welfare that the United States retains an aluminum industry that is financially viable and able to invest in research and development of the latest technologies. This is especially important given the growing role that aluminum plays in both commercial and defense applications.

The Secretary has determined that to remove the threat of impairment, it is necessary to reduce imports to a level that will provide the opportunity for U.S. primary aluminum producers to restart idled capacity. If no action is taken, the United States is in danger of losing the capability to smelt primary aluminum altogether.

Moreover, the Secretary has concluded that action to adjust imports must apply to imported downstream (wrought) aluminum products as well as primary (unwrought) aluminum. The reason for this is threefold. First, the downstream industry has been also adversely affected by surging imports. Foreign industrial policies that promote exports of downstream products while discouraging exports of primary aluminum have resulted in increased import penetration in many aluminum product sectors. Second, reducing imports of downstream products and

their replacement by domestic production will serve to increase domestic demand for primary aluminum. Lastly, import relief to downstream producers is necessary in order to compensate for the increase in primary aluminum prices that they will face. If the raw materials costs are increased for U.S. downstream producers, a tariff on imported downstream products is necessary so as not to adversely affect them vis a vis their foreign competitors.

VIII. RECOMMENDATION

Due to the threat, as defined in Section 232, to national security from aluminum imports, the Secretary recommends that the President take immediate action by adjusting the level of these imports. There are a few different means by which import restrictions could help address the threat to U.S. national security. Under alternatives 1 and 2, the quotas or tariffs would be designed, even after any exemptions (if granted), to enable U.S. aluminum producers to utilize an average of 80 percent of their production capacity. The quotas and tariffs described below should be sufficient to enable U.S. aluminum producers to operate profitably under current market prices for aluminum and will allow them to reopen idled capacity.

Two alternatives for achieving this objective are described below. In each alternative, quotas or tariffs would be imposed on imports of: 1) unwrought aluminum (Harmonized Tariff Schedule (HTS) Code 7601); 2) aluminum castings and forgings (HTS Codes 7616.99.51.60 and 7616.99.51.70); 3) aluminum plate, sheet, strip, and foil (flat rolled products) (HTS Codes 7606 and 7607); 4) aluminum wire (HTS Code 7605); 5) aluminum bars, rods and profiles (HTS Code 7604); 6) aluminum tubes and pipes (HTS Code 7608); and 7) aluminum tube and pipe fittings (HTS Code 7609) based on 2017 annualized imports in those categories.

In either alternative, the Secretary recommends that the action taken to adjust the level of imports must be in effect for a duration sufficient to allow sufficient time and assurances to stabilize the U.S. industry. It takes up to nine months to restart idled smelting capacity. Market certainty is needed to build case flow to pay down debt and to raise capital for plant modernization to improve manufacturing efficiency.

The Department of Commerce, in consultation with other appropriate departments and agencies, will monitor the status of the U.S. aluminum industry and the effectiveness of the remedies to determine if the remedies should be terminated or extended.

Alternative 1 – Worldwide Quota or Tariff

Quota

A worldwide quota of 86.7 percent on imports described above would restrict aluminum imports sufficiently to allow U.S. primary aluminum producers to increase production by about 669,000 metric tons, bringing total production to about 1.45 million metric tons, or about 80 percent of existing U.S. primary aluminum production capacity. This quota would also be applied to the five other aluminum product categories listed above and would help ensure the viability of those U.S. producers to meet national security needs.

Tariff

A tariff rate of 7.7 percent on imports of unwrought aluminum and the other aluminum product categories listed above should have the same impact as the 86.7 percent quota. This tariff rate would be in addition to any antidumping or countervailing duty collections applicable to any product.

This tariff rate also will adequately adjust for the price distortions in downstream aluminum product sectors that are caused by global overcapacity and overproduction being exported in the form of downstream products.

Alternative 2 – Tariffs on a Subset of Countries

Tariff

A tariff rate of 23.6 percent on imports of aluminum products from China, Hong Kong, Russia, Venezuela, and Vietnam should also restrict aluminum imports sufficiently to allow U.S. aluminum producers to utilize an average of 80 percent of their capacity. These five countries are the source of substantial imports due to significant overcapacity and potential unreliable suppliers or likely sources of transshipped aluminum from China.

As in Alternative 1 above, this tariff rate would be in addition to any antidumping or countervailing duty collections applicable to any product. For the targeted tariff, all other countries would be limited to 100 percent of their 2017 import volumes.

Exemptions

In selecting an alternative, the President could determine that specific countries should be exempted from the proposed quota by granting those specific countries 100 percent of their prior imports in 2017 or exempting them entirely, based on an overriding economic or security interest of the United States, which could include their willingness to work with the United States to address global excess capacity and other challenges facing the U.S. aluminum industry. The Secretary recommends that any such determination should be made at the outset and a corresponding adjustment be made to the final quota or tariff imposed on the remaining countries. This would ensure that overall imports of aluminum to the United States remain at or below the level needed to enable the domestic aluminum industry to return to 2012 production and import penetration levels.

Exclusions

The Secretary recommends an appeal process by which affected U.S. parties could seek an exclusion from the tariff or quota imposed. The Secretary would grant exclusions based on a demonstrated: (1) lack of sufficient U.S. production capacity of comparable products; or (2) specific national security based considerations. This appeal process would include a public comment period on each exclusion request, and in general, would be completed within 90 days of a completed application being filed with the Secretary.

An exclusion may be granted for a period to be determined by the Secretary and may be terminated if the conditions that gave rise to the exclusion change. The U.S. Department of Commerce will lead the appeal process in coordination with the Department of Defense and other agencies as appropriate. Should exclusions be granted the Secretary would consider at the time whether the quota or tariff for the remaining products needs to be adjusted to ensure that U.S. aluminum production meets targeted levels.

THE EFFECT OF IMPORTS OF ALUMINUM ON THE NATIONAL SECURITY

AN INVESTIGATION CONDUCTED UNDER SECTION 232 OF THE TRADE EXPANSION ACT OF 1962, AS AMENDED

APPENDICES

APPENDIX A: Public Comments

APPENDIX B: Public Hearing Testimony

APPENDIX C: Background on the Aluminum Industry

APPENDIX D: Trade Actions Related to Aluminum

APPENDIX E: Global Excess Aluminum Production

On May 9, 2017, the Department of Commerce ("the Department") published a Notice Request for Public Comments and Public Hearing on Section 232 National Security Investigation of Imports of Aluminum in the Federal Registrar. The public comment period ended on June 23, 2017. The Department received 91 written public comment submissions.

The public comment submissions were the following:

1) AAEI
2) AAMetals
3) AAPC
4) AEC
5) Alliance for American Manufacturing
6) Almag Aluminum
7) Aluar
8) Aluminium Association of Canada
9) Aluminum Association
10) American Beverage Association
11) American Foundry Society
12) Antony Harris
13) Arconic
14) Association of Global Automakers
15) Ball Corporation
16) Beijing Antaike Information Co.
17) Bemis Corporation
18) BorgWarner
19) Brazeway
20) Brazilian Aluminum Association
21) C-KOE Metals
22) Can Manufacturer's Institute
23) Canadian Coalition of Aluminum Extruders
24) Century Aluminum
25) CNIA
26) Constellium
27) Crown Cork & Seal USA
28) Crown Extrusions Inc
29) Dana Inc
30) Economic Policy Institute

31) Elixir Extrusions LLC
32) Emirates Global Aluminium
33) EnergyGPS Consulting LLC
34) European Aluminium
35) EU
36) Extrudax Aluminum
37) Extrusions Inc
38) Extrusions KC
39) Flexible Packaging Association
40) Forging Industry Association
41) Gateway Extrusions Ltd
42) George Washington University Law School
43) Government of Canada
44) Government of Mexico
45) Government of Russia
46) Grupo Vasconia
47) Guardian Six
48) ISRI
49) JTEKT North America Corporation
50) MAGNA
51) Magnitude 7 Metals
52) MEMA
53) Members of Congress (Drew Ferguson and Others)
54) Mexican Aluminum Institute (IMEDAL)
55) MOFCOM China
56) MSCI
57) NADCA
58) National Foreign Trade Council
59) NERA Economic Consulting
60) New Day Aluminum LLC
61) Novelis
62) Oil and Natural Gas Industry
63) PCP Champion
64) Peerless Products
65) PMA and NTMA
66) PMPA
67) Printpack Inc
68) ProAmpac
69) Representative Bill Johnson
70) Rio Tinto

71) Rollprint Packaging Products
72) Rusal
73) Russia Ministry of Economic Development
74) Senator Luther Strange
75) Senator Shelley Moore
76) Siberline Manufacturing Co., Inc
77) Sierra Aluminum Company
78) Starline Windows USA LLC
79) Toro Aluminum USA Corp
80) Trinidad Benham Corporation
81) TST Inc – 1
82) TST Inc – 2
83) Turkey
84) UAE MOFA
85) United Steelworkers – 1
86) United Steelworkers – 2
87) US Magnesium
88) US-UAE Business Council
89) Vollrath Company
90) Win Vent Windows
91) ZF_Aluminum

To view any of the public comments listed, please visit:

https://www.bis.doc.gov/232aluminum

Section 232 Investigation On The Effect Of Aluminum Imports on National Security

Commonwealth of Kentucky

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12TH LEGISLATIVE DISTRICT

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Health & Family Services
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Testimony of Representative Jim Gooch

Hearing on Section 232 Investigation of Imports of Aluminum

June 22, 2017

Good morning. I am Representative Jim Gooch of the Kentucky House of Representatives, where I chair the Standing Committee on Natural Resources and Energy. I want to thank President Trump and Secretary Ross for their strong leadership on trade and for finally recognizing what is at stake if we continue to allow imports to erode critical American industries.

Since 1995, I have had the honor of representing Kentucky's 12th District, home to Century Aluminum's Sebree smelter and the skilled, hardworking men and women who make it run. I like to call these men and women and others like them "the backbone of America." They make the raw materials like aluminum that we need to keep our economy and our communities strong, and they are vital to our ability to fight and win when our national security is at stake.

Unfortunately, these hardworking Americans, the aluminum industry, and American national security are facing a dire threat because of decisions that bureaucrats as far away as China have made. You will hear a lot today about how the Chinese government has created a bloated industry with no competitive advantage. You will hear

about how this bloated industry has forced other countries to flood the U.S. market with their imports. And you will hear about how aluminum is critical for protecting American soldiers on the battlefield.

But I would like to focus on a different aspect of your investigation. Specifically, it is impossible to overstate how important these aluminum plants are to our economy and our local communities. I know this because I see it firsthand, day in and day out. Speaking just for my district, Century Sebree does a lot more than make aluminum for armor and airplanes. The smelter supports around 500 jobs and pays $35 million in taxable wages. Those wages generate almost $2 million dollars in state income taxes. The plant pays another $1.5 million in state sales taxes, making it a critical source of revenue for our state and local budgets.

And this is just the direct economic impact of the smelter. The plant also purchases $41 million in goods and services from regional vendors who employ their own workers, pay their own taxes, and so on. And even as the industry struggles, Century Sebree continues to make vital contributions to local charities and schools that our community depends on. I don't know how we would replace them if the smelter shuts down.

I know that the other communities that still rely on the few remaining U.S. aluminum smelters face the same uncertain future. Once these facilities are forced to shut down, they are usually gone for good, and the losses to local employment, tax revenue, technology, skills, and expertise are permanent. Unfortunately, we are already at the

tipping point for what's left of this great industry. I urge you to take action to allow our aluminum producers to pull themselves back from the brink and continue playing their important roles in our national defense, our economy, and our communities.

Again, I want to express my appreciation for the efforts and attention of President Trump, Secretary Ross, and their staff to this vital part of the American economy and American national defense. And I thank you for the opportunity to appear before you this morning.

U.S. Department of Commerce Section 232 Investigation on the Effect of Imports of Aluminum on U.S. National Security

Testimony of the Ministry of Commerce of the People's Republic of China

June 22, 2017

Good morning. My name is Li Xie, and I am with China's Ministry of Commerce. As the only Chinese representative selected by the U.S. Department of Commerce to speak at this public hearing, on behalf of my Ministry and the Chinese industry, I wish to express the following views regarding the current Section 232 investigation against imported aluminum.

First, U.S. national security requirements for aluminum are entirely supplied by U.S. domestic production, and therefore, imported aluminum plainly does not impair U.S. national security. The amount of aluminum required by national defense and homeland security is small, accounting for only 1.7 percent of the U.S. total domestic consumption of aluminum and less than 4 percent of the U.S. total domestic supply of aluminum.

Second, the clear competitive and technological edge enjoyed by the U.S. aluminum industry ensures a continued and reliable supply of U.S. domestic aluminum for defense and national security. Over the past ten years, U.S. aluminum companies have acquired and control significant high quality bauxite stock in Australia, Brazil, and other countries and regions. For example, the bauxite reserved by Alcoa in these countries amounted to 230 million tons. In the meantime, U.S. companies have shifted electrolytic aluminum production to energy-rich countries and regions, such as Iceland and the Middle East. Furthermore, U.S. aluminum producers possess the most up-to-date technology and maintain a dominant position in the production of high-precision aluminum plate for the manufacturing of automobiles and aircraft. In addition, employment in the U.S. aluminum industry has been steadily rising, increasing by 3% since 2013.

Third, international trade in aluminum products strengthens, rather than impairs, the U.S. economy. The United States imports primary aluminum materials such as bauxite, alumina, and primary aluminum, as well as common semi-finished aluminum products. At the same time, the

United States exports a significant amount of high-end aluminum products. In 2016 alone, the total value of U.S. exports of aluminum semi-finished products amounted to 6.8 billion USD, accounting for a 1.4 billion USD trade surplus. It is clear that international trade in aluminum products does not have any impact on U.S. national security. Aluminum products from China imported into the United States are mostly general products with civilian applications, such as for building structures, packaging, electronic machinery shells or structural components, and commercial vehicles. None of these products are destined for the U.S. national defense and military sectors.

Finally, we emphasize that the WTO legal framework governing international trade does not permit member countries to impose restrictive trade measures through the abusive invocation of a "national security" exception. Many countries and interested parties have already raised serious concerns about possible trade restrictions that may result from this 232 investigation, and they have also expressed serious concern over the potential application of similar restrictive measures by other countries.

We believe that unilateral trade restrictions, having dubious legitimacy under the WTO, are not conducive to solving the global structural problems an industry faces, including global overcapacity. The underlying economic causes of such problems involve imbalances of supply and demand due to weaknesses in global economic growth and sluggish demand. The solutions to these challenges entail global joint efforts. For its part, the Government of China has proactively undertaken many measures to eliminate excess domestic aluminum production capacity and to encourage the broader application of aluminum products. We are here today to appeal to all countries to join hands in solving the global aluminum overcapacity problem through constructive engagement, not through unilateral trade barriers.

In conclusion, we encourage the global aluminum industry to continue to address the industry's challenges through dialogue and cooperation. We hope that the U.S. Department of Commerce will help encourage this approach by refraining from taking unilateral steps to impose restrictive measures on trade in imported aluminum products.

Thank you for your attention.

Testimony of Talal M. Al Kaissi
Embassy of the United Arab Emirates

before the

U.S. Department of Commerce, Bureau of Industry and Security

Investigation of U.S. Imports of Aluminum
Pursuant to Section 232 of the Trade Expansion Act of 1962

June 22, 2017 Hearing

My name is Talal Al Kaissi, and I am appearing here today as part of the Trade & Commercial Office at the Embassy of the United Arab Emirates. I appreciate the opportunity to participate in this hearing, and will use the few minutes allotted to me today to emphasize several points developed more fully in our written submission.

The fundamental point I wish to convey today is that the UAE's exports of primary aluminum to the United States are one part of a robust, dynamic, and positive relationship between our two countries. UAE's exports only primary aluminum which contributes significantly to the growing downstream United States aluminum sector." From the UAE's perspective, this trading relationship enhances U.S. economic and security interests. Please allow me to explain why.

First, due to its fair trade policies, economic growth, and history of economic partnership with the United States, the UAE is the largest export market for U.S.-origin goods in the Middle East and North Africa. Over the past decade, U.S. exports to the UAE grew by 118 percent, with the United States enjoying a $19 billion trade surplus with the UAE in 2016. This bilateral trade surplus, which benefits many U.S. manufacturing industries, includes growing U.S. exports of aircraft, space systems and satellites, electrical machinery and electronics, vehicles, nuclear energy technology, and many other high-value manufactured items. According to UN Comtrade data, as detailed in our written submission, U.S. exports to the UAE are nine times higher, by

value, than UAE exports to the United States. Aluminum accounts for 27 percent of total UAE exports to the United States, but only three percent of the value of all U.S. exports to the UAE. Moreover, some of the high-value U.S. exports to the United States, such as GE-made power generation equipment, are purchased by our aluminum industry.

The large U.S. trade surplus with the UAE also reflects the UAE's purchases of U.S.-made military hardware and technology. According to the Department's International Trade Administration, the UAE "offer{s} vast potential for U.S. exporters."[1] The UAE accounted for 6.4 percent of total U.S. defense exports in 2015, and has one of the largest projected growth rates for U.S. defense exports in the world.[2]

Second, this robust bilateral trading relationship is accompanied by strong bilateral investment ties. In fact, over 1,500 U.S. firms have invested in the UAE, many of which employ the UAE as a hub for regional operations. Conversely, and according to data from SelectUSA, UAE investment in the US is around 30 Billion USD, and supports some of the most innovative U.S. manufacturing industries. To cite just one major example, the UAE is 100 percent invested in GlobalFoundries, a manufacturer of advanced semiconductors in New York State.

Looking at the full picture of the economic ties between our two countries, the UAE has a trade relationship which supports jobs in every single U.S. state. Aluminum supplied by the UAE industry to U.S. value-added manufacturers around the country is part of this robust and mutually beneficial economic relationship.

Third, the bilateral trade and investment ties I've just summarized are further bolstered by U.S.-UAE cooperation on a wide range of strategic and security initiatives. As characterized by

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[1] International Trade Administration, *2016 Defense Markets Report* (June 2016), available at http://trade.gov/topmarkets/pdf/Defense_Top_Markets_Report.pdf, at 19.

[2] *Id.* at 9.

the U.S. Department of State, "{t}he United States and the UAE enjoy strong bilateral cooperation on a full range of issues including defense, non-proliferation, trade, law enforcement, energy policy, and cultural exchange," while working together "to promote peace and security, support economic growth, and improve educational opportunities in the region and around the world."[3] In the security arena, the UAE is one of the United States' critical partners in the region, providing essential support for U.S. troops, aircraft, and vessels operating in the Middle East. Indeed, Secretary of Defense Mattis was in the UAE just last month to finalize an updated Defense Cooperation Agreement. During the past 25 years, UAE and U.S. military forces have worked together on six military coalition actions, including the First Gulf War, Kosovo, Afghanistan, Libya, and recent operations in Syria and Iraq.[4] U.S.-UAE strategic cooperation extends to many other areas, including counterterrorism and anti-money laundering enforcement and nuclear non-proliferation.

This is the mutually beneficial context for UAE aluminum exports to the United States.

Finally, I want to briefly mention the connection between this investigation and the rules-based international trading system that the United States has long worked to promote, and which has helped so much to spur global economic growth. As the Department evaluates possible import-restrictive measures in this investigation, I would respectfully ask it to consider the compatibility of such measures with the World Trade Organization mutually agreed rules on when, how, and under what conditions WTO members may lawfully restrict trade.

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[3] U.S. Department of State, *U.S. Relations with United Arab Emirates (*February 2, 2017), available at https://www.state.gov/r/pa/ei/bgn/5444.htm.

[4] Embassy of the United Arab Emirates, *Share Commitment to Regional Security* (Accessed June 3, 2017), available at http://www.uaeusaunited.com/story/omnibus-security/.

Again, thank you for the opportunity to appear before you today. I hope my comments are useful as the Department formulates its findings and recommendations in this investigation.

Oral presentation by the Trade Mission of the Russian Federation in the USA on behalf of the Ministry of Economic Development of the Russian Federation at a public hearing on Section 232 National Security Investigation of imports of Aluminum

The Trade Representation of the Russian Federation in the USA on behalf of the Ministry of Economic Development of the Russian Federation expresses its gratitude to the US Department of Commerce for the opportunity to take part in these public hearings. We would like to present briefly our comments regarding Section 232 investigation initiated by the US Department of Commerce to determine the effects of aluminum imports on American national security.

Based on the principle that there are "broad" and "narrow" interpretations of the notion "national security"[1] we are of the position that under either interpretation Russian imports do not and cannot threaten to impair US national security.

According to the presidential Memorandum to the US Secretary of Commerce, the US domestic industry is suffering from the effects of global aluminum overcapacity and unfair trade practices[2].

As for aluminum overcapacity, the long-term solution to excess capacity does not reside in raising trade barriers which will distort international trade flows and lead to structural imbalances in the US and global aluminum industry both from supply and demand-side perspectives.

The Russian Federation supports the national Associations of aluminum producers of the United States, Canada, and European Union in urging the G20 leaders to provide a collective and prompt response by creating a Global Forum on aluminum excess capacity.

In addition to this, we would like to note that Russian suppliers do not rely on unfair trade practices. They are reliable and competitive suppliers and operate fairly in the US and Global market in the market conditions. In 2002 Russia was recognized as a market economy country by the USA[3] and the EU[4] and since 2012 Russia has been a WTO member. Importantly, Russian aluminum industry is completely privately owned. The Russian government has never granted specific export

[1] U.S. department of Commerce Bureau of Export Administration, 2001. The effects of imports of iron ore and semi-finished steel on the national security, page 5.
[2] Section 232 Investigation on the Effect of Imports of Aluminum on US National Security. Presidential Memorandum for the Secretary of Commerce, Aluminum Imports and Threats to National Security. April 27,2017.
[3] http://www.trade.gov/media/PressReleases/may2002/russianMESsecretarialstatement_060602.html
[4] European Commission announces formal recognition of Russia as "Market Economy", 29 May 2002. http://europa.eu/rapid/press-release_IP-02-775_en.htm

subsidies or provided unfair financial contribution to Russian aluminum manufactures aiming at their market expansion.

Aluminum is an exchange trade commodity and global market prices for aluminum are determined by the London Market Exchange on the basis of global supply and demand.

We believe the Department of Commerce should substantially narrow the approach in this investigation and admit that the aluminum imports from Russia can not harm US national security. Imports from Russia were not the cause of smelters closures in the USA. The main reasons for such closures are high energy costs, high labor costs, the growth of secondary aluminum production[5] as well as low prices coupled with the availability of alternative locations where smelters were basically re-located by the US producers allowing downstream production to enjoy competitive supplies and to develop new capacities. Mostly due to this relocation there have been no anti-dumping or countervailing measures initiated by the US primary aluminum industry since 1981 and 1973. Moreover, the US downstream industry relies on the imports of primary aluminum to produce downstream products and it helps to develop high value added aluminum.

So, any restrictive measures against foreign suppliers of aluminum from market economies can not be justified and would only harm the American aluminum industry and end-users since increase in aluminum prices due to imports restrictions would make downstream producers less competitive and decrease employment in these sectors. We would like to emphasize that without imports, there would be a massive shortage of aluminum raw materials required in the US market by all sectors of the aluminum industry.

Importantly, it should be noted that the Russian aluminum imports are not supplied directly for any US military purposes. So, there is no any dependency of the American national security on the supplies of aluminum from Russia.

We are convinced that Russian imports do not impair the capability of American industry to satisfy the defense needs of the country. The available data confirms that the national defense requirements for aluminum products are relatively low and can be fully satisfied by the US domestic industry. As reported by Bloomberg with reference to Harbor Aluminum Intelligence, US Department of Defense' demand on aluminum can be satisfied by domestic production[6].

[5] http://www.aluminum.org/sites/default/files/FactSheet2015.pdf
[6] Bloomberg. "America Has a Secret Switch to Make Military Metal". https://www.bloomberg.com/news/articles/2017-06-07/u-s-could-easily-meet-aluminum-defense-needs-researcher-says

On the contrary, the availability of imported unwrought aluminum from Russia enables continuous further development of high value-added aluminum production in the US which drives American economic development and allows the aluminum industry to contribute about 1% of the US gross domestic product, according to the Aluminum Association data[7].

For the reasons mentioned above, we believe that there is no need for the imposition of restraints on aluminum imports from Russia. Moreover, there is no threat or damage to the national security from Russian aluminum imports and any restrictions would cause injury to the wide range of US direct and indirect consumers, bringing significant adverse effect to the economic development. We believe the trade in aluminum products between US and Russia is mutually beneficial and should be supported and developed.

Thank for your attention,

[7] http://www.aluminum.org/advocacy/jobs-economy

Director Botwin and Members of the Panel, I thank you for inviting me to participate in this important hearing. As the Director General of European Aluminium, I speak today on behalf of the entire aluminium value chain in wider Europe from smelting to rolling and extrusion to recycling – these are more than 80 members with about 600 plants in 30 countries. A considerable number of our members operate production facilities, in both Europe and the US. As history tells, aluminium is transatlantic from its origins when Paul Héroult, a French engineer, and Charles Hall, an American student, discovered the electrolytic production method.

But today's speech is about the future, not the past. European Aluminium shares the concerns of the US government regarding the significant Chinese aluminium overcapacity and its impact on the US and European industries, despite the healthy demand for aluminium worldwide. We, the European industry, believe that addressing the root causes of these problems requires continued joint efforts between the US, Europe and Canada.

Within the framework of the current investigation, we urge the US Administration to take into account the following elements:

1. European imports of aluminium pose no threat to US national security and should be excluded from any proposed action under the current Section 232 Investigation;
2. the interconnected nature of the transatlantic aluminium industry (*we are united in our day-to-day business)*;
3. the common threat we face which requires a strong US – Europe coalition (*in our struggles, too, we are united).*

1. First, imports of aluminium products from Europe, *in view of both their quantity and characteristics*, do not constitute a threat to the US National Security within the meaning of your statute:

- Although the percentage of US imports of aluminium has increased in past years, the percentage originating from Europe has remain stable over the past decade. Europe accounts for a relatively modest part of US imports and supplies specialty, high value added products to US consumers. The

vast majority of European imports have little to no link to US national security but are largely used in commercial applications. In other words, the US is not dependent on European imports for its national security requirements, including national defence. Moreover, Europe is one of the most stable and reliable suppliers of aluminium products to the US.

Further, the European aluminium industry truly functions under market economy conditions and does not suffer from subsidization or excess capacity. Europe produces "fair" aluminium products and plays by the rules. Finally, Europe is a long-lasting military ally of the US and a fundamental player within NATO's alliance. Under these circumstances, it's clear that European imports do not threaten to impair the capability of US domestic industry to satisfy national security requirements. We call your government to refrain from targeting European imports with any potential measure associated with the Section 232 investigation.

2. Our second point is that the American and European aluminium industries are strongly interlinked. We are truly united in our day-to-day business.

- Demand for aluminium products is global and supply is more and more structured globally, not regionally. Approximately 15 multinationals are members of both the European Aluminium and the American Aluminum Association and supply daily a vast majority of the entire aluminium value chain on both sides of the Atlantic. Together they own approximately 80 production and manufacturing facilities in Europe, and 75 in the US and employ a large number of American workers. **These companies constitute a Transatlantic eco-system. Weakening the European side of their value chain will affect the US business.** This would also impact innovation and research and development, which are essential for the development of advanced aluminium manufacturing and applications.
- Intercompany shipments is a very common practice for these companies and measures would **also not be in the interest of US consumers**, who would see their choice of fairly priced products reduced and could suffer adverse consequences in terms of material yield, product quality, material availability and increased pricing.

3. Now, let's talk about the nature of the major threat we are all facing: you will understand what I mean when I say that in our struggles, too, we are united.

- During my presentation in the United States Trade Commission, only nine months ago, on the true underlying problem of Chinese aluminium overcapacity, we testified, together with many of the parties in the room here today, about the importance of having a ***global solution*** to this unsustainable ***global risk***. The ongoing cooperation at G7 and G20 level is indispensable to address *the root causes* of this structural threat. This requires continued joint efforts between the US, Europe and other like-minded governments. Moreover, we will continue to urge governments globally to address the effects of excess capacity on prices and quantities with traditional trade instruments, including through the WTO. We are concerned that restrictive actions based on the current 232 investigation on national security, will not provide lasting solutions that the markets need and may have unintended consequences that would lead to further market distortions.

The conclusion is clear: continued joint efforts between the US and Europe are necessary to tackle the root causes of the global excess capacity and to secure balance in the US and European aluminium markets. We are concerned that measures, as the ones that seem to be under consideration under the current 232 investigation on national security, will not provide the lasting solution needed by our markets and may have unintended negative consequences for integrated aluminium supply chains. In any event, European aluminium imports should not be the subject to proposed measures under the Section 232 investigation on national security, since they do not represent a threat to US national security.

With that, European Aluminium remains open to continue to collaborate in this investigation for the interest of all our members with particular interest in those that add value to our economies and societies on both sides of the Atlantic.

Economic
Policy
Institute

TESTIMONY OF ROBERT E. SCOTT

Hearing on Section 232 Investigation of Aluminum Imports
June 22, 2017

Good morning. My name is Robert E. Scott and I am a Senior Economist with the Economic Policy Institute. Thank you for holding this hearing.

Imports threaten the entire domestic aluminum industry, which is today hanging on only by a thread. The threat is driven by the growth of excess capacity and overproduction in China. Chinese primary aluminum production capacity has increased nearly 1500 percent since 2000, and China is responsible for 82 percent of the total increase in global aluminum production capacity between 2000 and 2017. This growth has been fueled by massive government subsidies and other market distorting practices.

Chinese overcapacity has suppressed global aluminum prices, transmitting injury directly to domestic aluminum producers. Aluminum is a global commodity, and prices are primarily driven by total global supply and demand, regardless of where the aluminum is produced, sold or stored, as reflected in the London Metal Exchange or LME price. The U.S. aluminum market effectively imports the adverse price and volume effects of China's capacity and production via changes in LME prices.

Collapsing prices have decimated U.S. primary aluminum production, capacity, and employment. The LME market price of aluminum fell 39% between

DRAFT—NOT FOR QUOTATION

2007 and 2016. In an industry with high fixed costs, most domestic producers have not survived this prolonged, steady price collapse Since 2010, 18 of 23 domestic smelters have shut down and roughly 14,000 good domestic production jobs have disappeared Last year, there were three U.S. alumina refineries supplying U.S. smelters; today, only one of these refineries is in operation. Despite a slight recovery in prices in early 2017, U.S. primary aluminum producers are barely surviving.

The threat to U.S. national security posed by aluminum imports is significant. The domestic industry is losing its ability to develop and supply products for both U.S. defense and critical infrastructure applications. Instead, the downstream U.S. producers are becoming increasingly dependent on unreliable sources of imports from the Middle East, Russia and elsewhere. If current trends persist, in time of war or other national emergency, the U.S. would find itself dependent on unstable import sources.

For these reasons, it is critical that Section 232 relief is broad. Specifically, relief should be structured in a manner that allows as much primary aluminum production as possible to restart in order to maintain critical aluminum capabilities and prevent reliance on unstable supply. Moreover, relief must account for the fact that because so much U.S. production has been shut-down due to China's market distorting practices, some imports are needed in the U.S. market. As such, as a contiguous source of stable supply, Canada should be excluded from relief while establishing broad, across the board restrictions on imports of both primary and downstream aluminum products.

According to market reports, the U.S. consumed approximately 5.3 million tons of primary aluminum in 2016. Nearly 80 percent of that consumption was serviced by imports, much of that from Canada, and less than a million tons were supplied by U.S. producers. Because aluminum is a global commodity, excluding Canada from relief would likely result in virtually all of Canada's available capacity serving the U.S. market. Market analysts estimate that Canada possesses approximately 3.3 million tons of capacity. The remaining available U.S. capacity is approximately 1.8 million tons. Consequently, both Canadian and U.S. producers could service virtually the entire market. Therefore, if U.S. production is to restart, excluding any other import sources from the relief would undermine Section 232 relief to the point where the U.S. industry would see virtually no benefits. Consequently, if the administration is contemplating a tariff rate quota, the quota portion on other imports sources should be extremely small and can be phased in over six to nine months as U.S. production restarts.

Moreover, relief must also be predicated, on adjusting for China's attempt to capture control of the entire value chain. Chinese industrial policy promotes downstream production and exports through the use of massive production subsidies and an export tax on primary aluminum designed to channel cheap inputs into manufacturing of downstream aluminum products (e.g. sheet, plate, foil and extrusions). Chinese exports of downstream products have soared, taking market share away from processors elsewhere, and reducing demand for primary aluminum outside of China. For example, total imports of all aluminum products (HTS 76) from China reached $2.9 billion in 2016, 16.9 percent of total U.S. imports

of aluminum products.[1] China was the second largest source of aluminum imports in the U.S., behind only Canada.

Thus, it is critical that Section 232 relief is broad, and also encompasses relief for downstream producers of aluminum products. Downstream producers also manufacture products for U.S. military and critical infrastructure applications.. In conclusion, for these reasons I recommend that the Commerce Department find that Aluminum imports are threatening to impair national security and critical national infrastructure, and recommend that the President authorize trade relief in the form of tariffs covering all aluminum products in HTSUS Chapter 76, excepting imports from Canada.

[1] Customs value data. Source: U.S. International Trade Commission, Trade DataWeb (data downloaded June 12, 2017).

Section 232 National Security Investigation of Aluminum Imports
Testimony of Mike Bless

June 22, 2017

Good morning. I am Michael Bless, President and Chief Executive Officer of Century Aluminum Company. On behalf of my 1,800 colleagues at Century, I would like to thank you for the opportunity to testify today.

Century is the largest remaining producer of primary aluminum in operation in the United States. We have three smelters: two in Kentucky and one in South Carolina. While others may claim to speak for the aluminum industry, only Century can speak for a majority of the primary aluminum production in the United States.

Our smelters produce high-purity and standard primary aluminum that are used in U.S. military and critical infrastructure applications. We are strongly committed to producing the highest quality aluminum products, and to producing them in the United States, for the United States. But our ability to continue doing so is at risk, along with what is left of the industry.

This investigation comes at a vital time. The domestic industry is in danger of completely disappearing. In 2000, the United States was one of the largest producers of primary aluminum in the world. There were 23 smelters here. Today, there are only five – and of these, only two are running at capacity. In 2000, there were almost 16,000 U.S. jobs in primary aluminum. Today, it's closer to 2,000. In just the last four years, employment has fallen nearly 60 percent. This statistic alone

highlights precisely why it is a matter of national security to maintain what is left of this industry.

There are two principal exchanges where primary aluminum is traded, the London Metal Exchange and the Shanghai Futures Exchange. These two exchanges are nearly perfect price discovery mechanisms and are extremely highly correlated. The LME maintains warehouses all over the world, including in China. As a result, the LME cash price reflects the total global supply and demand for primary aluminum, regardless of where it is produced, sold, or stored.

The LME price has been depressed for some time. From 2011 to 2016, the LME price dropped by nearly 40 percent. As prices crashed, the U.S. industry saw several of its remaining smelters shuttered. Neither a decline in demand nor costs can explain the drop. In fact, over this time, demand has seen significant growth and energy costs in the United States have declined. This should have been a healthy period for America's smelters. What, then, has caused the bottom to fall out of aluminum prices? The answer is simple: chronic, ever-expanding over production led by heavily-subsidized Chinese producers, but many others have also contributed.

For decades, as part of its centralized economic planning, the Chinese government has sought to create and grow a domestic aluminum industry without regard to market conditions. The Chinese aren't exploiting any natural advantage in

aluminum production – they don't have one. To the contrary, their smelters have among the highest costs in the world. They lose money. Yet, they continue to expand capacity and production, Chinese capacity increased by 1200 percent from 2000 to 2015. During that same period, the United States has seen smelters close across the country: in West Virginia, North Carolina, Maryland, New York, Ohio, Tennessee, Texas, Montana, Oregon, and Washington.

Market principles simply do not apply in China. Operating at a sustained loss is fatal to an American producer. But not for a Chinese producer. In fact, the one major Chinese company that has been highlighted as an example of good management and high profitability (Hongqiao) is now mired in allegations of fraudulent financial reporting and was recently bailed out by the Chinese Government when its debt was called. The Chinese government's subsidies effectively push the adverse effects of their industry's financial performance to the rest of the world. And so the industry in the United States is on life support.

The Chinese system ensures that unfairly priced primary aluminum incentivize further downstream over production, which is then exported. It's no surprise that the result is a flood of exports of semi-finished goods to the United States. Since 2000, Chinese exports of these products to the United States have increased by over 10,000 percent. As a result, the U.S. aluminum extrusion industry

and the U.S. aluminum foil industry have both sought trade relief. We support them in their efforts.

The surge in Chinese semi-finished exports further displaces additional U.S. primary aluminum production. Like these other parts of the U.S. aluminum value chain, the primary aluminum industry in the United States needs trade relief. Relief for the primary industry will no more impact the value chain than these other cases have. There is no need to pit one end of the value chain against the other. Broad comprehensive relief will benefit the entire value chain.

The Chinese themselves recognize that their actions have adversely affected the global aluminum market at all ends of the value chain. They claim to be committed to fixing the problem, but there is a significant gap between what they say, and what they do.

As the Chinese have collapsed the market, imports from the rest of the world have surged into the United States. Since 2012, imports from non-North American sources are up over 95 percent, while U.S. production is down over 60 percent. Because all aluminum is priced on a global exchange, these imports further transmit the Chinese price effects to the United States. U.S. producers cannot restart production with these large volumes of low priced aluminum imports from the rest of the world in the market.

So much of our production has collapsed that we are on the verge of losing the ability to produce all aluminum, not just high-purity aluminum. And once an aluminum smelter shuts, it almost never reopens due to the high capital costs needed to restart. We will then be dependent on imports from unstable and even hostile sources. We need relief in order to ensure that the US industry is not lost forever, thereby threatening our national security. Before I discuss how, I need to dispel with a few myths about high-purity aluminum production in the United States.

High-purity aluminum is used extensively in the defense industry, from building aircraft such as the F-18 and the F-35, to armored plate that protects our military vehicles and troops. High purity aluminum for these applications can only be produced in large commercial quantities at smelters like our Hawesville facility. Fractional crystallization or segmentation is a process by which high-purity aluminum is further refined into even higher-purity aluminum for use in different applications. This refining method cannot produce large commercial quantities of high-purity and currently only the Japanese and Chinese employ this method for producing high-purity. Consequently, this is in no way a viable substitute for the high-purity aluminum we produce at Hawesville.

Recently, we have seen a significant surge in high-purity aluminum from Dubai. This metal has taken the entire market from us. Some of our customers even testified in other settings that they switched sources due to concerns over the US

industry's long-term viability. As a result, earlier this year we were forced to cease all high-purity production. Because high-purity production is part art and part science, losing this volume jeopardizes our ability to properly train our workers to continue high-purity production. This production can be restarted, but only if the imports are "adjusted."

It is vital, however, that we maintain not just the capacity to produce high-purity aluminum in the United States, but primary aluminum as well. The Department of Homeland Security has included primary metals manufacturing in its critical infrastructure plan, and aluminum - from primary through downstream products – is included. Primary aluminum is a core input for such critical infrastructure as transportation, urban centers, energy transmission, and defense. Homeland Security, which has particular expertise in global supply chains, has expressly recognized that lengthy or distant supply chains are a source of risk because they are particularly vulnerable to disruption.

Century recognizes that imports are a necessary part of the U.S. supply chain. It is not our position that the United States can, or should be, be totally self-sufficient when it comes to aluminum. However, the status quo is unsustainable. Canada, our NAFTA partner, is the largest exporter of primary aluminum to the United States. Over the last five years Canada's exports to the United States have been fairly stable increasing slightly. By contrast, all other non-North American

sources surged by over 95% in the last five years as U.S. production collapsed. As a contiguous, friendly neighbor, Canada is a safe and reliable source of supply. In Century's view, Section 232 relief can be effective without applying it to Canada.

However, Section 232 relief should be applied to the other sources of imports, which are supplied from long distances and are often not secure. Such a long, insecure supply chain is vulnerable to disruptions and presents a significant risk to U.S. national security. The goal is to bring idled capacity in the United States back online, with an economically viable future. Excluding countries other than Canada from the relief would make any relief ineffective. In fact, other countries such as the EU already apply tariffs against U.S. primary aluminum and downstream products. All we are asking for is similar relief. By "adjusting imports" through the 232 investigation, the administration can preserve what is left of the U.S. industry, while addressing the root cause of the industry's problems – China's excess production and capacity -- through the WTO process. But, without real relief in this proceeding, the nation's security, including its critical infrastructure, is at risk.

Thank you very much for your time.

Testimony: Section 232 Investigation

John Lapides, President,
United Aluminum Corporation,
100 United Drive, North Haven, CT 06473
203-239-5881

Mr. Secretary, members of the Commerce Department and other distinguished guests,

Thank you for the opportunity to provide testimony.

Background: I am the President of a 4th generation family-owned rolling mill in North Haven, CT. I have worked at United Aluminum Corporation since my graduation from Stanford University Graduate School of Business in 1977. I have served as President for 27 years.

United was founded by my great grandfather, Harris, in 1891 an immigrant from Russia. My grandfather, Louis, bought the first rolling mill in 1915. My father, Robert, returned to United after serving as the captain of two destroyers in WWII at the Pentagon during Korean Conflict and later became United's second president upon the death of Harris in 1957. Originally named United Smelting and Aluminum Company, Inc., United began rolling aluminum over 100 years ago. The Company was a founding member of the Aluminum Association in 1933, along with Alcoa and Reynolds Aluminum.

My points are brief:

1. We are in favor of international trade. Canada, for example, produces ingot and the slabs used for hot rolling essential to US rolling mills and the downstream value chain, including United Aluminum.
2. Chinese threat to U.S and Canadian Smelting: Chinese overcapacity caused low world prices threatening the viability of smelting in the U.S. and Canada. There is only one high-purity smelter left in the U.S., Hawesville, and that one is limping along already, a victim of low world prices caused by world overcapacity.
3. Downstream impact significant: Chinese overcapacity is not just a smelter issue and has grown into a downstream issue that is affecting United Aluminum and other U.S. Rolling mills, downstream stamping, and other manufacturing.
    a. The increased use of aluminum in auto production has masked the adverse impact on the broader downstream end-use parts businesses.
    b. Serial dumpers can circumvent WTO rules by trans-shipping and manufacturing parts in other countries.
    c. The loss of manufacturing is detrimental to investment and job creation.
    d. The loss of know-how, capability, and capacity will continue to harm readiness and national security. When we need it, will we be able to build it?
    e. China once needed overseas suppliers; this is less true every day as Chinese manufacturers improve their products, partly due to Chinese insistence on technology transfer for permission to access Chinese markets.
4. Imbalanced Tariff Rates harm U.S. Producers: In addition to unfair competition, the imbalance of tariff rates between the U.S. and China and most other major trading countries allows open access

to the U.S. and systematically disadvantages U.S. companies struggling to gain volume and the critical mass to remain in business. Example: sheet and coil:

a. China: 10% tariff on imports. 17% VAT rebate on exports of semi-fabricated aluminum.
b. Europe: 7.5% tariff on imports, including freight cost. U.S.: 3% on duty on imports to the U.S.

5. Other competitiveness issues: Tax rates, poor vocational skills, lower government sponsored pure research and development, internationally uncompetitive truck weights and insufficient rail capability, both freight and commuter rail, impede competitiveness and U.S. growth.
6. U.S. Trade Actions to level the playing field: Trade actions undertaken by the US must discourage other countries, such as China, from distorting free trade regimes and world-wide economic balances, through improper subsidization of their own industries.
7. Overall Social as well as Economic Impact of Unfair Trade: China and others have used state-sponsored support of manufacturing and unfair trading practices to export not only their products, but also unemployment, pollution and potential social unrest in the U.S.

With the trade situation as it is, we can't make America Great Again by being totally dependent on other countries. On behalf of American workers, thank you.

Testimony of John Adams, Brigadier General, U.S. Army (Retired)
President, Guardian Six LLC
Hearing Regarding Section 232 National Security Investigation of Imports of Aluminum
June 22, 2017

Good morning, Mr. Secretary and distinguished panelists. I am John Adams, President of Guardian Six LLC and a Retired Brigadier General of the U.S. Army. As I will discuss today, there is no doubt in my mind that aluminum imports are a threat to U.S. national security, and that broad and immediate Section 232 relief for the U.S. aluminum industry is necessary to address this threat.

I am a proud Army veteran, with over 30 years of experience in the U.S. military. I served in Operation Desert Storm in Iraq and Operation Guardian Assistance in Rwanda, and spent nearly 18 years in different military posts in Europe, Asia, the Middle East, and Africa. On September 11, I was stationed at the Pentagon as Deputy Director for European Policy in the Office of the Secretary of Defense, participating in immediate disaster recovery operations at ground zero and coordinating international support for the U.S. diplomatic and military response. My final post prior to retiring from the Army in 2007 was as Deputy U.S. Military Representative to the NATO Military Committee in Brussels.

Given my extensive military background and political science and strategic studies education, in 2013, I authored a study on the military's growing and dangerous reliance on foreign nations for the raw materials, parts, and finished products needed to defend the United States. Among the materials that I studied were alumina and bauxite, concluding that the United States' growing reliance on imports of these and other materials places our U.S. national security at risk. This conclusion was true back in 2013 when I authored the study and is especially so today, as the domestic aluminum industry's financial and operational condition has only worsened due to imports.

Aluminum is a raw material with critical U.S. national security applications. Primary aluminum and other aluminum products are used in a variety of military applications, including F-18 and F-35 fighter jets, Navy and Coast Guard vessels, and Army and Marine Corps tactical vehicles. Aluminum's high strength-to-weight ratio, formability, rigidity, and ballistic protection are indispensable to our modern military arsenal. As an Army Aviator during the 1980s, I saw firsthand the importance of aluminum in providing the lightweight strength essential to my aircraft's wings in high-stress flight maneuvers.

Aluminum is also used in numerous critical infrastructure applications, which play a vital role in keeping our country safe and secure. Aluminum is a critical component used in bridges and highways, buildings, and other construction. Aluminum is also widely used in utility grids. In the event of war, natural disaster, or any other national emergency, damage to this and other critical infrastructure is likely, which would only increase U.S. demand for aluminum and reinforce the importance of ensuring adequate domestic supply. Therefore, as is it has done in prior Section 232 investigations, the Commerce Department should continue to broadly define national security to include critical infrastructure.

Imports of aluminum increasingly place our national security at risk. Aluminum is a global commodity whose price reflects total global supply and demand. It is no secret that the Chinese government provides massive subsidies to its aluminum industry. These subsidies fuel aluminum production that far exceeds demand. The result of China's growing aluminum overcapacity and production has been a complete collapse in global aluminum pricing. Because all aluminum is priced off of the global exchanges, U.S. imports of aluminum simply transfer the adverse price and volume effects of Chinese excess capacity and production to the U.S. market, which has sent U.S. prices tumbling.

The collapse in U.S. pricing has resulted in dramatic declines in U.S. production, capacity, and revenue in recent years. For instance, the number of domestic smelters declined from 23 in 2010 to only 5 in 2016. Just last year, there were three U.S. alumina refineries supplying these U.S. smelters; today, only one of these smelters is in operation. In 2010, the U.S. industry had 3.3 million tons of capacity and produced 1.7 million tons of primary aluminum; last year, the industry had 1.9 million tons of capacity and produced only 820 thousand tons. This year, these figures are expected to be even worse. Hundreds of highly skilled jobs have been lost in the process. Should we fail to successfully address our aluminum industry's rapidly eroding market share, additional losses are certain.

The current state of the domestic aluminum industry is simply unsustainable from a national security perspective. Our national security relies on the U.S. industry's smelting capabilities. However, given the dramatic declines in U.S. primary aluminum capacity and production, the vast majority of primary aluminum is now produced overseas. This means that U.S. producers of finished products that are directly used in U.S. military and critical infrastructure increasingly rely on imports from Russia, the Middle East, and elsewhere for this critical aluminum input. These are potentially hostile sources of supply and, at best, unstable sources of supply.

Qatar provides a good example of the dangers of relying on imports. Just two weeks ago, several of its Middle East neighbors severed diplomatic ties with Qatar, leaving the country without the logistical capability to ship its aluminum outside of the country and placing those relying on Qatar's aluminum exports in a very vulnerable position. Put simply, having to rely on aluminum imports that travel over water during a conflict is a risk to our national security.

Finally, we need to ensure that the U.S. industry remains healthy throughout the production chain by incentivizing production – from smelting to the finished and fabricated product – in the United States. In a time of war or other national emergency, the domestic industry must be self-sufficient from top to bottom, without dependence on unreliable foreign suppliers. It is also important to consider the industry's ability to supply national security products in the context of the industry as a whole. If the commercial market is unprofitable, the defense production sector – and with it not only the smelters, but also the R&D -- *cannot* survive. Irreparable damage to our domestic

aluminum industry increases our defense industrial base dependence on China and other potentially hostile governments.

With this in mind, broad and immediate relief for the aluminum industry is imperative. This should include:

- Safeguarding America's economic and national security by recommending remedies that yield a meaningful opportunity for U.S. aluminum producers to recapture lost market share and rebuild broken supply chains.

- Taking a broad view of the national security importance of aluminum, considering production for military weapons and equipment as well as homeland security and critical infrastructure.

- Providing relief to the entire aluminum supply chain in the United States – from smelting to the production of finished aluminum products.

- Establishing enforceable mechanisms for the elimination of global aluminum overcapacity.

- Proactively applying our trade enforcement laws to provide relief from market distortions *before* plants are forced to close and capacity is irreparably lost.

- Rigorously applying domestic sourcing policies in government procurement of aluminum.

Mr. Secretary, I applaud the administration's initiation of this Section 232 investigation. As I know you agree, we cannot allow our American aluminum capacity, R&D, and skilled workforce to disappear. We need concerted action to address the national security risks to our domestic aluminum manufacturing capacity before we lose it.

Thank you, sir.

JACK A. HOCKEMA
Chairman and Chief Executive Officer

June 16, 2017

The Honorable Wilbur Ross
Secretary of Commerce
U.S. Department of Commerce
1401 Constitution Avenue, NW
Washington, DC 20230

Re: Section 232 Investigation into Primary Aluminum Imports

Dear Secretary Ross:

Kaiser Aluminum welcomes the Department of Commerce's and Trump Administration's leadership in initiating an investigation into the impact of aluminum imports on U.S. national security and is pleased to respond to the Department's request for public comments. The products and materials Kaiser Aluminum produces from high-strength aluminum alloys and the capacity to produce those products and materials in the U.S. are critical for both current and future U.S. national security interests and we support measures and remedies that effectively target unfair competition and address the needs of the entire aluminum value chain, including downstream U.S. fabricators, that are vital to U.S. national security interests.

As the Department moves forward with its investigation and considers Section 232 remedies, our concern is that broad protective measures aimed at all suppliers of primary and purity aluminum will materially increase our costs and undermine our ability to effectively compete in global markets against foreign manufacturers that are not impacted by those measures. Those unintended consequences would create an advantage for those foreign downstream fabricators, including the rapidly increasing number of government subsidized Chinese downstream fabricators, and put downstream fabricators like Kaiser Aluminum that supply aluminum products critical for defense applications. In addition, our domestic competitiveness and the competitiveness of our domestic customers who export products will be substantially and negatively impacted through an increased risk of product substitution with competing products that are not impacted, including imports of aluminum-intensive finished products made with aluminum content supplied by foreign manufacturers. Measures that put U.S. downstream fabricators at risk will have severe long term negative implications for U.S. national security interests

By way of background, Kaiser Aluminum (NASDAQ:KALU) is a leading producer of fabricated aluminum products for defense, aerospace/high strength (both civil and military), satellite (both civil and military), general engineering, automotive and custom industrial applications. We are headquartered in Foothill Ranch, California, operate 12 fabricating facilities in North America (11 in the United States and one in Canada), employ over 2,700 employees and ship more than 600

27422 Portola Parkway, Suite 200
Foothill Ranch, California 92610-2831
Telephone: (949) 614-1760

million pounds of plate, sheet, extrusions, rod, bar, tube, forge stock, and wire to a global customer base.

Kaiser Aluminum's manufacturing facilities have a long history of supplying aluminum material to the U.S. military dating back to World War II. Today, as more fully described in the attached brochure, our plate and sheet is used on more than 50 military aircraft and helicopters including the F-15, F-16, F-18, F-22, F-35, T-45, AWACS, C-17, E-2 and Nimrod. We also produce material for armor and mine blast kits for a variety of military platforms including the HMMWV and MRAP, as well as rod and bar products for munitions, arms, mortars and rockets.

A major portion of U.S. military strength is in aircraft, missiles, other aerospace applications, military vehicles and armor. The products and materials we produce from high-strength aluminum alloys are the predominant material for these applications and the capacity to produce these products in the U.S. is critical for both current and future U.S. national security interests. As a downstream participant in the U.S. aluminum industry, we convert primary aluminum or secondary aluminum purchased from third parties into value-added semi-fabricated products. We purchase our primary aluminum (including high-purity aluminum needed to produce certain alloys used by some of our aerospace and military and defense customers) through a globally diversified supply base which we believe supports our globally competitive cost position and is integral to our surety of supply.

The downstream sector of the U.S. aluminum industry in which we compete both requires and has seen significant investment in recent years. We believe it is also by far the largest employer and generator of economic opportunity in the U.S. aluminum industry. Kaiser Aluminum alone has invested over $630 million in our business since 2006 to increase capacity, lower cost and improve quality. Maintaining our ability to effectively compete in global markets and produce these products in the U.S. is important not just for the jobs provided and communities supported across the country, but also for our national security.

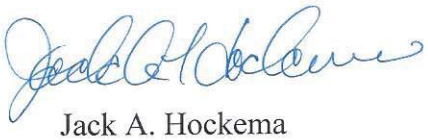
Global market imbalances in the aluminum industry are caused by the unprecedented excess capacity in China facilitated through decades of illegal and subsidized investment and production. After exponentially expanding its primary aluminum production, China continues to create downward pressure on world aluminum prices, negatively impacting U.S. producers of primary aluminum and contributing to the shuttering of U.S. aluminum smelters. Similar to what we have seen with primary aluminum, China is now engaged in a massive government subsidized expansion into the production of downstream aluminum products with the stated intent to support Chinese expansion in military aircraft, support new Chinese competitors, and export those products further threatening U.S. downstream producers. In addition, Chinese circumvention of U.S. duties through misclassification and/or transshipment through third countries and the theft of intellectual property also continue to be major competitive concerns.

As the U.S. government considers the impact of aluminum imports on national security, Kaiser Aluminum supports meaningful and effective solutions that address Chinese overcapacity, government subsidies and unfair trade practices. We need a system that is fair and creates a level playing field. If you put us on a level playing field, Kaiser Aluminum and our employees can compete successfully against any counterpart in the world and will embrace that opportunity.

To be clear, we support all measures and remedies that effectively target unfair competition. A broadly applied measure that impacts all foreign-sourced primary aluminum will have unintended consequences and do far more harm than good when it comes to U.S. national security interests, maintaining and generating secure domestic jobs, ensuring global competitiveness of U.S. manufacturers and maintaining a strong U.S. manufacturing base for domestic downstream fabricators that supply aluminum products for critical defense related applications.

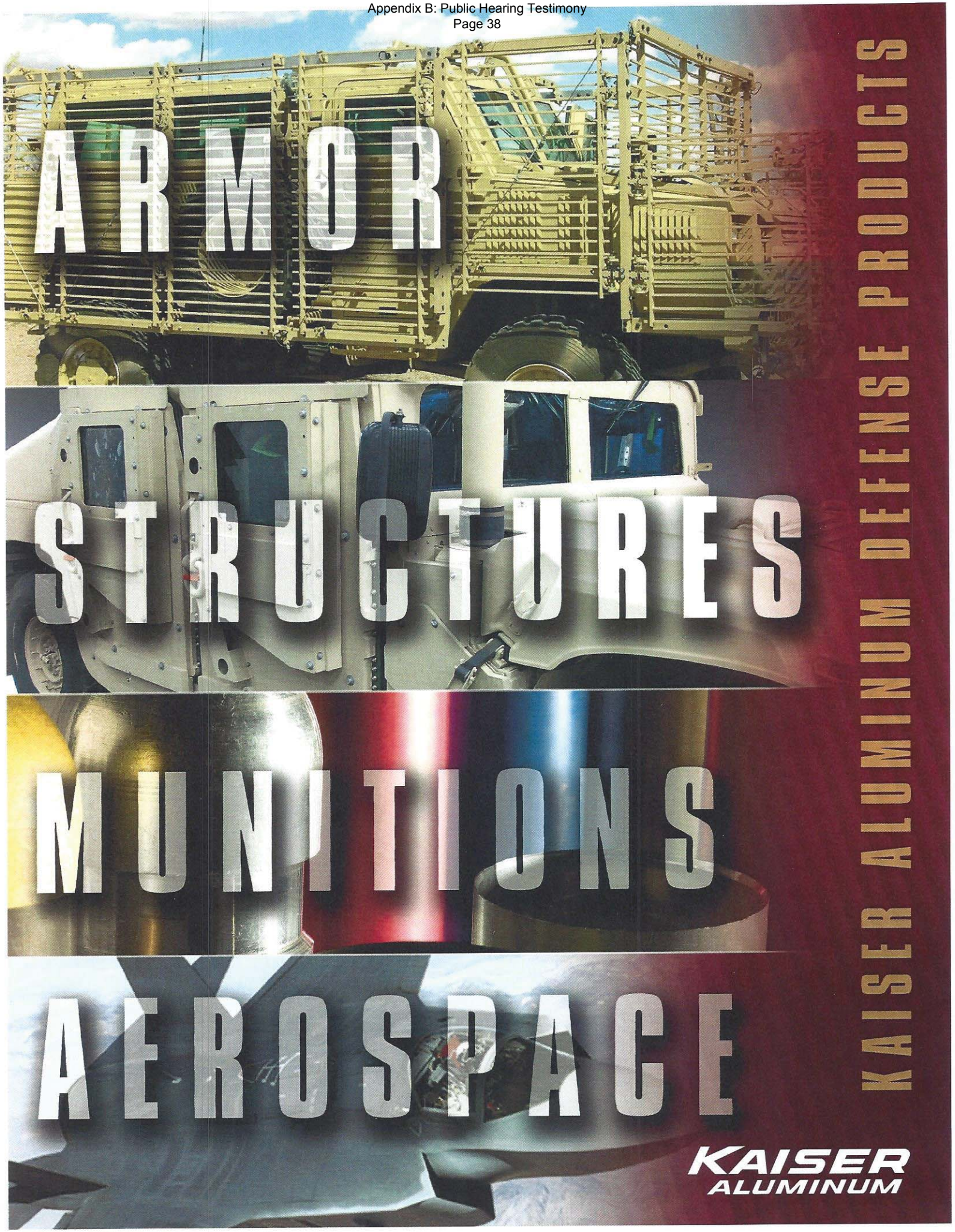
Please let us know if we can provide any other information. We would welcome the opportunity to further explain our views.

Very truly yours,



Jack A. Hockema

cc: Mr. Brad Botwin
Director, Industrial Services
Bureau of Industry and Security
U.S. Department of Commerce
1401 Constitution Avenue, NW
Washington, DC 20230


ARMOR
STRUCTURES
MUNITIONS
AEROSPACE
KAISER ALUMINUM DEFENSE PRODUCTS
KAISER
ALUMINUM

KAISER ALUMINUM

Proud to serve those who proudly serve.

ARMOR SYSTEMS

Kaiser Aluminum manufactures plate in gauge ranges from .250" to 10". Aluminum's light weight and high strength make it ideal for armoring vehicles. Kaiser Aluminum provides material for manufacturing armor and mine blast kits for a variety of military platforms including the HMMWV and MRAP.

CAGE ARMOR

Kaiser Aluminum produces hard alloy bar and soft alloy extrusions for cage armor utilized on a number of vehicles. Aluminum cage armor is approximately 50% lighter than steel cage armor.

STRUCTURES

Aluminum Extrusions are used for a wide variety of structures. They provide an excellent option to light weight vehicles and increase payload. Aluminum can be used in many applications such as suspension control arms, drive shafts, windshield surrounds and other structural elements.

1. Extruded Turret Armor
2. Door Posts and Sills
3. Armor Plate
4. Forged Turret Ring
5. Custom Windshield Surround

Kaiser Aluminum manufacturing facilities have a long history of supplying aluminum material to the U.S. Military dating back to World War II.

Our company has built a reputation of providing "Best in Class" service and delivery of aluminum alloys that offer protection and light-weighting for improved safety and mobility.

Kaiser Aluminum employs a formal and exacting methodology of developing new products and processes. It is a highly structured approach that combines sophisticated metallurgical development and the rigorous controls of Lean Sigma to produce products that meet or exceed the most demanding requirements.

Aluminum's high strength to weight ratio makes it the ideal material for vehicle armor systems, structures, munitions and aerospace components.

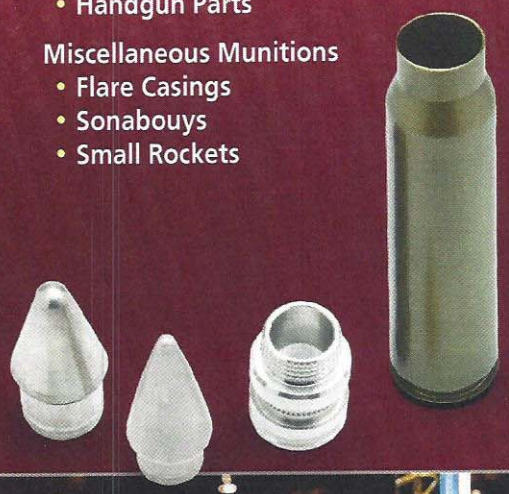
MUNITIONS

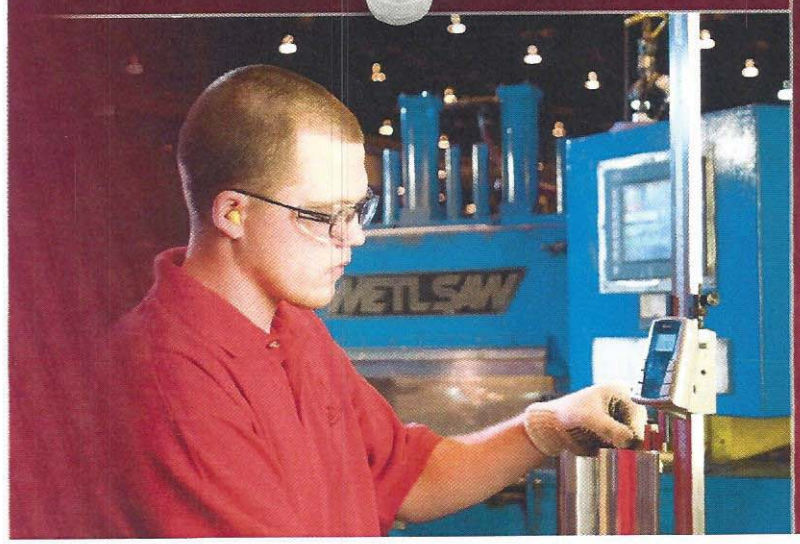
Kaiser Aluminum provides a variety of rod and bar products for munitions, weapons, mortars and rockets.

Ammunition
- Small Caliber
- Medium Caliber
- Anti-Tank, Mortar and Artillery Rounds

Weapons
- M4 / M16 Parts
- Shotgun Receivers
- Handgun Parts

Miscellaneous Munitions
- Flare Casings
- Sonabouys
- Small Rockets



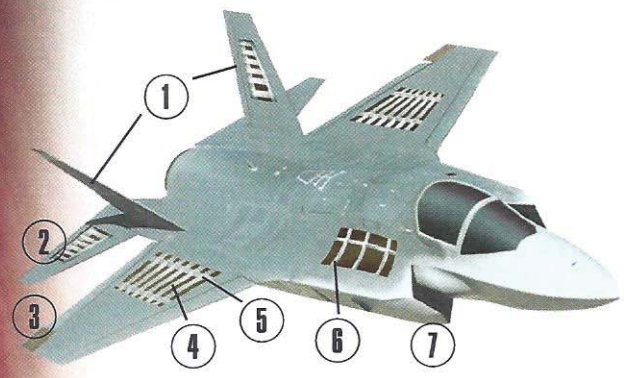


AEROSPACE

EXCELLENT DAMAGE TOLERANCE CAPABILITY

Today, Kaiser Aluminum plate and sheet is used on more than 50 military aircraft and helicopters including: The F-15, F-16, F-22, T-45, AWACS, C-17, E-2 and Nimrod. The Aerospace industry demands high-strength aluminum products that perform in challenging and often harsh environments. In addition to plate, coil and sheet, Kaiser Aluminum produces rod and bar products for high-strength applications.

Because of aluminum's light weight and excellent damage tolerance capability, it is used in a large number of aerospace products ranging from simple components to primary load bearing structures for military, commercial, business and private aircraft.



1. Vertical Stabilizer
2. Horizontal Stabilizer
3. Plate for Trailing Edge
4. Spars
5. Ribs
6. Fuselage Frame
7. Air Intake Shell

KAISER ALUMINUM DEFENSE PRODUCTS

A LONG-TERM APPROACH TO GREATNESS

At Kaiser Aluminum, we take pride in the "Best in Class" customer service we deliver to every one of our valued customers on a daily basis. We provide high quality products to the exact specifications our customers demand, and we are constantly improving our processes to provide on-time delivery that is unrivaled by our competition.

The Kaiser Production System is a unique, integrated application of the tools of Lean Manufacturing, Six Sigma and Total Productive Manufacturing which enables us to deliver superior customer satisfaction through the consistent, on-time delivery of high quality products on short lead times.

Best in Class

KAISER ALUMINUM

For more information on the complete line of Kaiser Aluminum defense and aerospace products, call
Mike Odom • Flat Rolled Products • 214-618-4959
Steve Mahan • Rod, Bar and Shapes • 678-377-4930
www.kaiseraluminum.com

Testimony of

Robert Smith
President, USW Local 420-A
United Steel, Paper and Forestry, Rubber, Manufacturing, Energy, Allied Industrial and Services Workers International Union (USW)

Regarding the

Section 232 National Security Investigation of Imports of Aluminum

June 22, 2017

Mr. Chairman.

Thank you for allowing me to testify today. My name is Robert Smith, and I am the President of United Steelworkers, Local 420-A, based in Massena, New York. I have over a decade of experience in the aluminum industry and would like to share with you my concerns over the future of an industry that is critically important to the national security of the United States. In addition, I'd like to make you aware that the United Steelworkers International Union (USW) will be submitting a comprehensive statement in support of the investigation before the close of the comment period.

This investigation comes at a critical time for the American aluminum industry. In addition to its use throughout the economy, domestic aluminum production is a critical component of our nation's defense industrial base and vital to our critical infrastructure. The Department of Defense understands this, and classifies aluminum as a strategic material with uses ranging from structural airframe material to military and combat vehicles. For example, the Navy's Independence-Class Littoral Combat Ship is built with an aluminum hull, while our troops traveling in light-tactical vehicles are being protected from improvised explosive devices by aluminum armor plating. Aluminum is similarly essential to the production of cutting edge fighter jets like the F-35 Joint Strike Fighter and the next generation of unmanned aerial vehicles. And aluminum is

increasingly prevalent and crucial to the development and production of next-generation ammunition, projectiles, mines, torpedoes, and other ordnance systems.

In addition to traditional defense and military applications, aluminum is increasingly being utilized throughout our nation's critical infrastructure. Today, the U.S. electrical grid extensively employs lightweight aluminum wiring while aluminum capacitors are used in our personal electronics. When our personal devices seek connectivity through satellite networks, those aerospace systems often rely on aluminum for a range of functions. In fact, NASA's Orion spacecraft, being built to transport humans deeper into space than ever before, is being built with an aluminum alloy. As we continue to explore the next generation of infrastructure development, aluminum is progressively strengthening its role as a critical resource. Whether it is the development of solar panels and energy storage, or as a lightweight, high-strength building material, aluminum will continue to serve a vital role in the rebuilding and maintaining of our nation's infrastructure.

With so many aspects of military production, maintenance, and forward-looking research and development having a heavy focus on continuing and increased use of aluminum, ensuring that the nation and military have a stable, reliable supply of this critical material is a national security imperative. Even more specifically, the military requires the highest-quality materials if they are to be integrated into our planes and ships, missiles and munitions and to support our critical infrastructure.

Modern aluminum production, especially of military-grade high-purity aluminum, is a highly complex and highly technical process. Moreover, it cannot be done by just anyone. It requires a trained and skilled workforce, and the development of those skills takes years. One of the great advantages that America has – for now – is that the necessary skilled workforce already exists as long as the domestic industry still exists. As facilities close, however, our workforce skill-base is atrophying quickly. It is also important to note that bringing lost capacity back online is not something that can be done overnight.

Right now, there is only a single domestic producer still operating that can produce aluminum at a purity level above 99.8%, and that represents a massive security risk and national vulnerability. If that producer is forced to shut down because of these predatory trade practices, it raises the very real and wholly unacceptable danger that the U.S. would be forced to rely on foreign sources in the event of an unforeseen future need such as a conflict or natural disaster.

And this situation is becoming more of a potential reality with each passing day as the threats to the entire spectrum of aluminum production increase. Last year, American primary aluminum production dropped below 1 million tons for the first time since the 1950s, and so many domestic smelters have either closed or curbed production that only two smelters in the U.S. are considered fully operational. This is being driven by a glut of aluminum in the global market which is causing a drop in global

aluminum prices and making it uneconomical for domestic producers to stay in business.

This glut of global aluminum, which is causing American workers to lose their jobs and harming America's national security, has a very discernible and sadly familiar cause: China. The Chinese government has been illegally subsidizing its aluminum industry for years, driving a massive expansion of its production and capacity far beyond what its internal demand can absorb. These state-subsidized Chinese producers are then dumping this excess production on the world market, driving American and other industries out of business and rapidly capturing market share.

The proof is in the numbers. Between 2006 and 2015, Chinese primary aluminum production grew by over 225 percent, and by the end of 2015 it accounted for more than half of all aluminum production in the world. As this happened, it exported more and more of this illegally subsidized product into the U.S. market, which saw aluminum imports rise by 18% just last year while, as I mentioned earlier, U.S. production reached its lowest point in more than 60 years.

This trend shows no sign of stopping, and the statements by the Chinese government that they will address this are sorely inadequate and cannot be believed any longer. The time is short for the American aluminum industry, and strong and swift governmental action is absolutely critical if this industry is to survive and continue to provide good jobs for American workers, the highest quality products to the American military, and the critical infrastructure needed to secure our national security.

As the government approaches how they will deal with this issue, let me emphasize that the driving force behind our aluminum problems is Chinese overcapacity which has infected world markets. Unlike steel, where dumped and subsidized products have directly impacted our market, China's policies and practices have suppressed world prices via the London Metal Exchange, where aluminum is priced.

Right now, Canadian imports are the largest single source for consumption in our market. But, Canadian production is not fueled by illegal and predatory practices and the approach in this 232 Investigation must be to target the production of those countries which are engaging in unfair trade. As our International President Leo Gerard has said, Canada should be exempted from any relief measures that might be implemented as a result of the Administration's actions. I and other workers in the aluminum sector here in the U.S. support that approach.

Thank you again for the opportunity to share my views on this important topic.

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TESTIMONY OF MARCO PALMIERI, NOVELIS CORPORATION
U.S. Dept. of Commerce - Aluminum 232 Investigation Hearing
June 22, 2017

Good morning Secretary Ross. My name is Marco Palmieri, and I am the President of Novelis North America. I would like to thank you for the opportunity to speak on this important topic today. Novelis believes that the Department's investigation is timely and vital to the future of the domestic aluminum industry.

Novelis is the world's largest producer of flat-rolled aluminum products used to make beverage cans, cars and trucks, and other diverse products. Novelis, a $10 billion company, operates 25 facilities in 11 countries and is the global leader in aluminum recycling.

While we are a global company, we are deeply committed to our North American operations and have made significant investments in our U.S. facilities in recent years. Novelis employs around 4,000 people in the U.S. — with its corporate and regional headquarters and global research and technology center in Georgia, seven production sites in Georgia, Indiana, Kentucky, New York, Ohio and West Virginia, and a sales and engineering lab in Michigan. Today, I would like to highlight three main points for the panel.

First, Novelis believes it is important for the Department to recognize that the aluminum industries of the United States and Canada are intertwined, with Canada playing a vital role in support of U.S. aluminum manufacturing efforts.

U.S. smelting operations cannot meet the domestic demand for primary aluminum. At Novelis, we do source both primary and recycled metal from the U.S. But, because it is not possible for us to obtain all of the primary aluminum that we need through our U.S. purchases, we also rely on primary aluminum originating from Canada.

Additionally, our facility in Canada works in tandem with our U.S.-based facilities to manufacture products as part of a complex processing chain. For example, when making certain automotive products, aluminum may cross the border at least four times before it is fully finished and ready to ship to customers throughout the U.S., Canada, and Mexico.

Therefore, to ensure the viability of the U.S. aluminum industry, the Department should exclude Canada from any remedy recommendation made in its final report.

Second, Novelis believes in free and fair trade, but there must be a level playing field. Imports originating from countries like China – with excessive overcapacity driven by government subsidies – have significantly affected the aluminum industry, putting Novelis' U.S. manufacturing facilities at risk. In fact, unfairly priced aluminum from China has already forced us to exit certain product lines.

In 2008, we left the converter foil business – and shuttered a facility in Kentucky. Only a few years ago, we sold our household foil business. And, in April 2014, we were forced to idle some equipment and lay off workers at our facility in Indiana.

To date, Novelis has maintained profitability by migrating its product portfolio to emphasize markets that have not yet been affected by imports from China. Those imports, however, have been entering new product market segments in the U.S. Novelis salespeople regularly report hearing about offers of imported products at extremely low prices.

We also have reason to believe that Chinese producers will increase production of automotive aluminum capacity within the next few years. If this increased capacity of aluminum were permitted to be exported to the U.S. at subsidized and unfair prices, Novelis could be forced to slash production, lay off employees, and shutter entire facilities if those facilities are not able to deliver reasonable rates of return.

Third, the same equipment used to process and roll auto sheet can be used to make products for military applications, but those applications make up a small portion of the entire U.S. downstream aluminum market. Therefore, if trade measures under this investigation only were enacted to protect the aluminum used directly in defense-related products, such remedies would not secure the stability of the entire domestic aluminum industry, nor its associated hundreds of thousands of U.S. jobs.

In conclusion, Novelis respectfully requests that the Department recognize that 1) Canada should be excluded from any remedy or recommendation made in the Department's final report; 2) unfair prices and subsidized imports originating from outside North America are negatively affecting U.S. national security interests; and 3) relief is needed for the entire aluminum supply chain – including downstream rolled products – to ensure a healthy aluminum industry in the United States. Thank you.

Constellium

Jean-Marc GERMAIN, Chief Executive Officer of Constellium

Oral testimony - June 20, 2017

Good morning. Thank you for the opportunity to be here with you today. I am Jean-Marc Germain, CEO of Constellium, based in Baltimore.

Constellium is a downstream aluminum leader, listed on the NYSE. With 12,000 employees, we generate $5 billion in revenue, the U.S. representing around 40% of our business. We have a large industrial presence with plants in West Virginia, Alabama, Michigan, Kentucky and Georgia, and with a new R&D hub in Michigan.

Our main clients include Boeing, Airbus, Lockheed Martin, SpaceX, AB InBev, Rexam/Ball, Ford, General Motors, BMW to name a few.

In the defense market, we have been a key partner to the U.S. defense industry for decades, working with US defense companies such as Lockheed Martin. We also partner with the US Army to develop new aluminum solutions for armored vehicles.

In our plant in Ravenswood, we are manufacturing advanced alloys for military aircraft and armored vehicles. We supply plates for military aircrafts and jet fighters, such as the Boeing C-17 Globemaster, the F-16, or the new F-35 Joint Strike Fighter.

We consider the US to be one of our key markets. This is why we have invested in the last five years over $1.8 billion in our U.S. plants, and in Ravenswood alone, $170 million.

Our current positioning as a global leader is the direct result of this significant investment program. However, our business is threatened today by China's long-term practice of market-distorting policies.

The risks that we are facing today are directly linked to the cost advantage the Chinese aluminum converters are benefiting from.

In particular, non-reciprocity in the access to low cost raw material puts us at great disadvantage. Primary aluminum traded on the Shanghai Futures Exchange (SHFE) has regularly a price advantage over the price paid by U.S. players based on the London Metal Exchange – but non-Chinese players cannot buy this raw material at the same price on the SHFE, as there is a 15% export duty on primary metal and on aluminum scrap.

This cost advantage is even greater for the Chinese aluminum conversion industry, as Chinese rollers and extruders, in addition to benefiting from lower production costs and lower raw material costs, are also profiting from a 13% VAT rebate on their exports.

Concretely, this means that for a product that would sell for $3,000, China would have a $500+ advantage thru tariff and duty structure, which represents more than half of our value add.

China's unfair pricing has already impacted our business, even though we believe the worse is still to come. Already, we have witnessed a significant increase of China's U.S. imports of plates from 5kt in 2012 to almost 70kt in 2015 which represented more than 25% of the market, and more than our own plate shipments from Ravenswood. This resulted obviously in missed revenue for our U.S. business.

This situation threatens our downstream business, which relies on ***both*** high value added products and larger volume standard products because of the fixed costs incurred by our facilities' large installed capacity and equipment.

As China's interest and skills in aluminum value added products are rising, our industry is at even greater risk. In the coming years, China is expected to acquire the technical knowledge to produce also higher end products, and is already pushing into the global aerospace and automotive markets.

Such a situation is obviously not sustainable in the long-term, and has a direct impact on our capacity to invest in our plant and in our assets.

While actions are needed to address the excess capacity and unfair pricing from China, I would like to express our strong support of fair, and rules-based trade of aluminum among the United States, Canada, and Europe. Our industry is interlinked via a global supply chain that is critical for the success of the aluminum business in the United States and relies on good and longstanding trading partners such as Canada and Europe.

For these reasons, I respectfully request that the Commerce Department and the Administration formulate actions to address China's unfair trading practices. Remedies should consider the whole value chain and should target all Chinese originated products - without exclusions. They should be tailored to address China's trade-distorting subsidies, while protecting existing trading relationships between the U.S, Canada and Europe.

Thank you again for your time and for giving Constellium this opportunity to testify on this critical issue for our industry. I would be happy to respond to your questions should you have any.

Section 232 National Security Investigation of Aluminum Imports
Testimony of Bob Prusak

June 22, 2017

Good morning. My name is Bob Prusak. I am the Chief Executive Officer of Magnitude 7 Metals. Magnitude 7 Metals recently purchased Noranda's idled smelter located in New Madrid, Missouri. Thank you for this opportunity to testify today and explain why Section 232 relief is necessary for the domestic aluminum industry. My many years of experience in this industry make it abundantly clear to me that domestic primary aluminum production is in the midst of a crisis driven by Chinese overcapacity, declining global prices (for instance, the LME price has declined 39% between 2007 and 2016), and rising imports. Put simply, our industry is at a critical turning point and at risk of disappearing absent much needed relief.

The number of domestic aluminum smelters in the United States has fallen from 23 in 2010 to 5 today, with only 2 two running at capacity. I would like to talk to you about two of these smelters today – Ormet and Noranda. I have a personal connection to both.

I served on the board of Ormet Corporation, a domestic producer of primary aluminum, from 2007 to its closure in 2014. In early October 2013, Ormet announced it was curtailing the operations of its 272,000-ton smelter in Hannibal, Ohio, which is located along the West Virginia border south of Wheeling. Ormet started producing aluminum at its reduction plant in 1956. Like other U.S. smelters,

in the years leading up to its closure, Ormet's production suffered from falling aluminum prices and rising imports, largely driven by global and principally Chinese overcapacity. Ormet laid off roughly 1,000 workers in 2013 – most of them unionized steelworkers. With market conditions continuing to deteriorate, at the end of July 2014, Ormet could no longer withstand the onslaught and announced the permanent closure of its smelter, firing the last twenty workers and dashing any hope that its operations would be revived.

Not only did Ormet's closure deal a heavy blow to the workers and their families relying on the company for a decent wage, it also sent shock waves throughout the Ohio River communities. Ormet was effectively the sole employer in both Clarington and Hannibal, Ohio, and was the largest employer in New Martinsville, West Virginia. When Ormet closed, those towns were decimated.

Unfortunately, this story has been repeated in communities throughout the United States. Just last October, my company purchased Noranda's distressed smelting assets out of bankruptcy. As with Ormet, Noranda's New Madrid smelter was forced to shut down after more than 50 years in operation. Also like Ormet, Noranda produced primary aluminum for semi-finished aluminum products used in both U.S. military and critical infrastructure applications that are vital to U.S. national security.

Roughly 900 high paying, high skilled jobs were lost when Noranda closed, with many workers still out of work. When the smelter was operational, the company and its employees spread roughly $45 million dollars throughout Southeast Missouri. With this money gone, everyone – from local restaurants and business to the local school district – felt the pain. Madrid County, where the smelter is located, also took a big hit, losing millions of dollars of tax revenue annually. As a result, the local government was forced to delay projects, institute hiring freezes, slash infrastructure spending, and postpone wage increases. Community programs were negatively impacted, as well as the local police and ambulance services. Because the revenue from Noranda comprised nearly 17 percent of the entire budget for the New Madrid School District, a budget deficit resulted, leading to layoffs, staff reductions, and program cuts. In the span of only one year, the unemployment rate in New Madrid County increased by more than 3 percentage points.

Ormet and Noranda are not alone. Again, they are only two among 23 domestic smelters that have shuttered operations since 2010. While my company recently purchased Noranda's smelting assets out of bankruptcy, the facility is not yet operational. We are currently negotiating a new power contract and hope to restart operations soon. However, without comprehensive Section 232 relief, our ability to fully restart operations is far from certain. Relief is nothing short of critical to get Noranda back up and running, and bring New Madrid back to life.

This leads me to my final point. Section 232 relief must be broadly granted to the domestic aluminum industry and not riddled with exclusions that prevent the industry from getting back on its feet. Relief on high-purity alone is insufficient to bring aluminum production back to the United States. If we continue to allow imports to erode our market share of primary aluminum, we will lose the ability to produce all primary aluminum including high-purity aluminum. Our primary aluminum production must be viable to justify our high-purity production. The United States must maintain its domestic smelting capabilities because primary aluminum is used to produce a variety of semi-finished products for U.S. national security applications. Finally, I would stress that excluding any import sources other than Canada from Section 232 relief would undermine any relief granted to the point where the U.S. industry would see virtually no benefits. If the United States is going to maintain its ability to produce the aluminum that is vital to our national security, we cannot allow the relief to be undermined.

Thank you for your time and consideration.

Statement of
Thomas Robb
Chief Operating Officer, Noranda
Chief Operating Officer, New Day Aluminum LLC

on

United States Investigation Under Section 232 of the Trade Expansion Act of 1962
To Determine the Effects on the National Security of Imports of Aluminum
before the
U.S. Department of Commerce
Office of Technology Evaluation, Bureau of Industry and Security
June 22, 2017

Good morning Secretary Ross, Director Botwin, representatives of the Department and those conducting today's hearing.

My name is Thomas Robb, and as Chief Operating Officer of New Day Aluminum and its Noranda Bauxite and Noranda Alumina subsidiaries, I welcome this opportunity to offer my company's unique perspective on the Commerce Department's Section 232 investigation into imports of aluminum. Our perspective is unique because we operate, through Noranda Alumina, the only smelter grade alumina refinery remaining in operation in the United States.

Alumina is the critical raw material in the production of aluminum. Tracing aluminum back to its source, the aluminum process begins with bauxite, which is refined to produce alumina, which is then converted to aluminum through an electrolytic process. It takes approximately two pounds of bauxite to produce one pound of alumina, and two pounds of alumina to produce one pound of aluminum.

Our alumina refinery is located along the Mississippi River in Gramercy, Louisiana. It currently produces more than 1.1 million metric tons of alumina annually and employs 440 people. Through our Noranda Bauxite subsidiary, we also operate a bauxite mining operation in St. Ann, Jamaica. Our Jamaican facility currently supplies all of our Louisiana facility's bauxite needs, and our Louisiana facility refines the bauxite ore to produce alumina.

Noranda Alumina is the principal source of alumina supply to Century Aluminum, the largest remaining U.S.-based producer of primary aluminum, for two of its three operating smelters in

the U.S. To our knowledge, Century is a significant U.S.-based producer of high purity aluminum, which is necessary for a number of national defense and military applications. We are proud of that partnership and its service to our nation.

We respectfully recommend that any trade policies considered in this investigation should include protections to ensure the continuation of a U.S.-based supply of alumina. We further recommend that any review of the national security effects of imports of aluminum must also include a review of the U.S.'s supply of and access to bauxite ore, from which alumina itself is derived. As the Department may be aware, there are no longer any bauxite mining operations in the U.S. The closest sustainable, foreign source of bauxite is in Jamaica, where Noranda Bauxite is strategically positioned. The other three major mining facilities in Jamaica are wholly or majority owned by Chinese, Russian and Hong Kong interests, and none are permitted to export bauxite out of Jamaica.

Rebuilding the U.S. stockpile of bauxite ore, which began in the 1930s and which was reinvigorated by President Reagan during his Administration, would be one way for the U.S. to alleviate the risks associated with sourcing this raw material exclusively from foreign countries and/or foreign interests. We therefore suggest that this Administration give strong consideration to creating a U.S. stockpile of as much as 10 million tons of bauxite, and we would be willing to work with the government on building up and managing that strategic reserve.

As to the importation of aluminum itself, we understand the Department's need to review a variety of trade policies related to this issue. However, and we share this with great deference,

we believe trade policies that might significantly restrict or eliminate foreign imports of aluminum may have unintended but significant negative consequences. For example, in 2016, the U.S. produced approximately 60% less primary aluminum than it produced in 2012. Over the same period, U.S. demand for raw and semi-manufactured aluminum increased by more than 40%. This tells us that the importation of primary aluminum is necessary and must continue, especially in the near term.

I am a businessman and not an economist, but I believe that the current Chinese dominance in the production of both alumina (in its refineries) and aluminum (in its smelters) creates an ability for China to manipulate the aluminum value chain for its benefit. If such manipulation puts U.S. and other allied countries' alumina and aluminum production facilities out of business, we and our allies will become dependent on foreign sources of these critical raw materials. We recognize that may be the worst of all possible scenarios, but merely suggest that all eventualities be considered in your investigation.

In conclusion, we recommend that the Department consider creating a 10 million ton strategic reserve of bauxite in the U.S. We also recommend that the various unintended consequences of severe tariffs or trade regulations on foreign imports of aluminum, only one of which we postulated here, be examined in robust detail in considering whether and how such restrictions should be imposed.

Thank you for the opportunity to offer our comments. I welcome any questions you may have.

Paul-Henri Chevalier
President
Jupiter Aluminum Corporation
2800 S River Road
Des Plaines, Illinois 60018 – USA

Department of Commerce
232 hearing – June 22nd, 2017

Good morning Mr. Secretary and members of the panel!

Thank you for the opportunity to share Jupiter Aluminum and its employees' view here today.

My name is Paul-Henri Chevalier. I am the President of Jupiter Aluminum Corporation, an American privately held aluminum producer based in Des Plaines Illinois.

I am here because we need to preserve our industry and manufacturing jobs by establishing a level playing field with honest and fair competition so market-distorting behaviors cease.

Jupiter Aluminum is turning 25 this year and since 1992 grew from a few tons to over 100,000 tons shipped annually. We are about 400 people working in 3 plants, 2 in Indiana and 1 in West Virginia.

24/7, we transform aluminum scrap sourced domestically into coils sold in the construction, automotive, distribution and government markets. Your car most probably has a license plate cast one day in our mill. Over 95% of our products are sold in the US and Canada.

While relatively small compared to many other aluminum producers, Jupiter's impact on the local and domestic economies is much larger than its own size when you factor in the various vendors and partners our operations require and there is no need to remind everyone that manufacturing and manufacturing-related jobs pay very well with excellent benefits.

Today, I will focus on 3 specific damaging consequences of the Chinese trade practices.

1. The first damaging consequence is directly related to fair trade.

The aluminum market started attracting the Chinese in 2003. The Aluminum Association organized a meeting with the Deputy Assistant to the Secretary of Commerce in December 2003 to raise the issue about the Chinese trade practices that allowed them to sell below market price. Not much resulted from that meeting.

Since then, Chinese aluminum production soared from 11% of worldwide supply to 55% today. 21 American smelters closed in the same period. China developed this extraordinary capacity during one of the world's worse recessions.

Jupiter Aluminum adapted to the new economic environment. Our patented high temperature oxy-fuel technology saves 70% of our natural gas consumption. That technology by the way also reduces CO2 emissions by 70%. However, innovation did not suffice; we also trimmed costs, investments and growth.

Competition is good as it forces you to continuously improve. That however only works when standard economic rules apply to everyone. In China, financial viability does not seem as important as providing jobs and maintaining social stability.

Once American Aluminum production is gone, nothing will block Chinese companies from moving downstream and directly sell finished goods our customers' customers.

China keeps increasing production today resulting in a dangerous over-supply. This battle between job creation in China and financial performance in the US is unfair.

2. The second damaging consequence is related to our children's future.

That impact is global as it affects human health. EPA regulations are good for specific reasons. However, its standards only apply to American industries.

The Aluminum Association has found that if Chinese aluminum producers energized from coal-fired power plants constituted a country, that country would be the 16th largest emitter of greenhouse gases in the world.

North-American production by comparison is cleaner because regulated. Replacing clean production by dirty one is unfair.

3. The third damaging consequence is on our country's future.

Jupiter mills are based in the heart of the steel industry. Over the last 30 years, the region has seen the steel mills bankrupting and downsizing. During that time, demand did not really disappear. Only production moved to China. The same is happening to aluminum.

It has become increasingly difficult to attract the next generation in our industry as it has seen its parents lose their jobs and beyond their jobs their faith in their future.

The questions are:

- Can our country thrive without an industry?
- Should our country become completely dependent on China for its manufactured goods?

It is clear today that we must work with China on an agreed upon path forward. That said, that path forward has to be fair and honest without market-distorting behaviors.

Thank you, Mr. Secretary, and thanks to the members of the panel for this opportunity to address our industry's concerns today.

Paul-Henri Chevalier,
President
Jupiter Aluminum Corporation

Section 232 Oral Testimony of Henry Gordinier – June 22, 2017

Secretary Ross, I would like to thank you for the opportunity to assist the Department in the Section 232 investigation on the impact of Aluminum imports to U.S. national security.

My name is Henry Gordinier, and I am the Chief Executive Officer of Tri-Arrows Aluminum, Inc. Tri-Arrows is a downstream producer of rolled aluminum sheet serving the North American beverage container and automotive markets. It is our belief that a healthy North American *aluminum industry* is vital to national security.

Our manufacturing operation is in the Commonwealth of Kentucky, where we employee over 1,200 employees at the Logan Aluminum rolling mill, a production joint-venture with Novelis Corporation.

The Commonwealth of Kentucky has more than 150 aluminum facilities – from mills to makers of end-user products – and the industry employs nearly 18,000 full-time workers. Aluminum accounts for $2 billion in the state's gross domestic product.

Since 2014, Tri-Arrows has invested approximately **$425** million dollars in our manufacturing facility, creating **250** high skilled manufacturing jobs. These investments will increase our capacity by approximately **30%**, and expand our manufacturing capabilities to serve a wider range of products in the North American market.

Notably, these investments protect the capacity needed to serve our existing customer base, and support the developing automotive sheet market.

At the outset, I would like to emphasize that Tri-Arrows supports *fair and free competition*, where this competition is based on (1) cost, (2) efficiency, and (3) productivity.

Based on these measures, the Logan rolling mill is regarded as one of the most productive mills in the world, yielding a low-cost position in the market place.

But we cannot compete with government subsidies.

It is my understanding that direct intervention of capital, labor, land, raw materials, and basic inputs has led to massive overcapacity in Chinese aluminum assets, upstream and downstream, from primary production to fabricated products. *With the Chinese overcapacity, we believe both our current business, as well as future investment and job expansion, are at risk.*

Today, imports are relatively small. However, they are growing at ~30% per year and we have seen forecasts which show China targeting over 75% of the West Coast Market. Recently, Tri-Arrows has been displaced from West Coast plants in favor of Chinese metal.

Metal costs for the Chinese manufacturers are not the same as in other market-based countries. Chinese metal is advantaged over domestic supply due to subsidized smelters, a unique metal index (SHFE) which typically trades at lower levels than the LME, and export policies and tariffs which favor the export of value added materials over primary aluminum. Due to these advantages, Chinese mills can offer fabricated product for import at extremely low prices – prices so aggressive that no Western mill would be able to generate a profit.

I can present two recent examples that illustrate where subsidized Chinese imports are impacting the North American aluminum economy today. These examples show that the threat of harm is shifting from conceptual to transactional.

1. First: In a recent multi-year North American contract discussion, Chinese price points were used to anchor the negotiation as a global reference point. Used in this manner, the impact of these imports is far greater than the actual volume shipped would indicate.

2. Second: Semi-fabricated products (coil and rod) from China are being offered at prices below the exchange based price for metal in the U.S., with the intent for these products to be repurposed as raw material. This material is available in the market place today. If semi-fabricated product can be sold in North American below the base price for aluminum, it is not a leap to see where this level of "discount" might be applied to more highly engineered products.

In conclusion, Tri-Arrows seeks a level playing field in which to compete with all market participants. As the Committee considers potential trade remedies, we believe that unintended consequences can be minimized through recognizing the following:

1. The North American aluminum industry is part of, and dependent on, a global supply chain, where the vast majority of our trading partners operate on market-based principles;
2. The full aluminum value chain should be considered, given the ability for policy to redirect/shift values between upstream and downstream products;
3. The threat to the North American aluminum industry stems from Chinese overcapacity and non-market based economic practices.

Thank you.

Testimony of
Heidi Brock, President and CEO of The Aluminum Association
Section 232 Investigation on the Effect of Imports of Aluminum on U.S. National Security
June 22, 2017

Thank you for the opportunity to testify at this very important hearing. My name is Heidi Brock. I am the President and CEO of The Aluminum Association.

The Aluminum Association represents companies along the aluminum value chain. Our membership consists of large, global companies, as well as small companies with a domestic or local focus. We represent primary producers of aluminum, producers of semi-fabricated products and aluminum recyclers, as well as industry suppliers. The U.S. aluminum industry supports nearly 713,000 direct, indirect and induced jobs, as well as $186 billion in economic output, more than 1 percent of U.S. Gross Domestic Product. Despite some market headwinds well-known to this panel, we are proud of the fact that this industry has committed or invested more than $2.3 billion in domestic plant expansions in the United States over the past several years.

Section 232 of the Trade Expansion Act authorizes the Department of Commerce to determine if imports threaten U.S. national security. There are three reasons why it is appropriate to look at aluminum as a strategic material, and the aluminum industry as a highly significant industrial contributor to national security.

First, aluminum is used in numerous national defense applications, including major components of Army ground vehicles, jets flown by the Air Force, and warships deployed by the Navy, in addition to armaments. In short, aluminum is in some of the most conflict-ridden hotspots on the globe keeping America's servicemen and women safe.

Aluminum is also critical to our nation's economic security. Aluminum is helping that airplane flying above, stay above you. It's in the walls of homes and office buildings. It's in the satellite that communicates with you, or the vehicle you drove to attend this hearing.

All of this speaks to the versatility of the metal. Aluminum is lightweight, corrosion resistant, easily formed, highly conductive, highly reflective, non-toxic and durable. And, aluminum as a base metal can be combined with other materials to create and repurpose alloys for a wide variety of products. For example in 1954 there were 75 unique aluminum alloys registered at the Aluminum Association – today we have more than 540 active alloys that exist for different applications.

If you look at military vehicles – when our industry combines aluminum with alloying agents – and then puts it through a heat treatable process, you have a metal that is strong enough to stop a bullet. And, aluminums strength and durability is trusted to handle some of the harshest conditions imaginable.

- The Army uses high-strength, blast-resistant aluminum in its vehicles. For the Humvee's and Bradley fighting vehicles aluminum reduces weight, resists rust and stands up under tough conditions.

Second, aluminum is a critically important material for the nation's infrastructure. Aluminum products are essential for energy generation and transmission, for the construction of bridges and buildings, and for the machinery and equipment that build and maintain that infrastructure.

And third, aluminum manufacturing and the products made from aluminum support significant economic activity that contributes to the well-being of Americans and fosters problem-solving innovations in packaging, jet planes, wind turbines, trucks and cars, electronics, among many other things.

Thus, having a competitive, economically healthy U.S. aluminum industry is vital for the manufacturing and defense industrial base of the United States, and the many communities that depend on the jobs supported by our industry.

As an industry, we have a unified position on a set of principles that we recommend be considered in the current investigation and any recommendations that might emerge from it.

First, we respectfully ask that any trade remedies should specifically address Chinese overcapacity and its effects.

Second, we also ask that trade remedies not impact current trading relationships between the U.S. and critical trading partner countries which have been determined by the Department of Commerce to be operating as market economies, especially Canada and the EU.

And finally we ask that trade remedies have positive effects for the entire aluminum value chain, including both primary and downstream U.S. producers and their employees.

I mentioned at the outset that the U.S. aluminum industry is united in recognizing Chinese overcapacity as the fundamental trade issue hurting the domestic industry today. As an association, we have been working with the different government agencies to address this acute and persistent problem.

We have supported efforts by USTR in the context of government to government bilateral discussions to raise aluminum overcapacity in China as an issue that must be addressed. We have raised our concerns about Chinese mis-classification of fake semis to U.S. Customs and Border Protection. And, we have coordinated efforts with our colleagues in the aluminum industry in Canada, the EU, and other countries similarly affected by Chinese overcapacity.

We have provided data and information to the U.S. International Trade Commission that is undertaking an investigation, at the behest of the House Ways and Means Committee, on the competitiveness of the U.S. aluminum industry. The USITC report is scheduled for release to the Committee next week.

Ultimately, our view is that the best solution for the U.S. aluminum industry and the jobs its supports would be a negotiated agreement with China that results in measurable reductions in Chinese aluminum capacity and/or growth. That would address the problem directly and set the U.S. industry – both upstream and downstream -- on a course of expansion, rather than contraction, creating more jobs and more opportunities.

Secretary Ross, I would like to thank you for initiating this investigation. Our industry appreciates the attention the Commerce Department is giving to this important issue.

On behalf of the members of Aluminum Association, we stand ready to assist in any way we can.

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Testimony by Ben Kahrs
Sr. Vice President of Strategy, Technology and Corporate Development, Alcoa Corporation
Section 232 National Security Investigation of Imports of Aluminum
By the U.S. Department of Commerce
June 22, 2017

My name is Ben Kahrs and I'm Sr. Vice President of Strategy, Technology, and Corporate Development for Alcoa. On behalf of Alcoa Corporation, we welcome the Department of Commerce's Section 232 investigation on the effect of aluminum imports on U.S. national security. We support the Administration's efforts to review the strategic importance of aluminum and to consider actions that will address unfair trade.

Alcoa Corporation pioneered the modern aluminum industry in 1888 and has been a global leader for nearly 130 years. In November 2016, Alcoa Inc. separated into two companies – Alcoa Corporation and Arconic. Today, Alcoa Corporation is focused primarily on the upstream sector of the aluminum industry where we mine bauxite, refine it into alumina and smelt it into aluminum. In the U.S., we have five operating locations including two smelters and one rolling mill, with three other U.S. production facilities currently curtailed. Alcoa represents 47% of all U.S. aluminum smelting capacity.

Aluminum is a critical component of airplanes; automobiles; smart buildings; consumer electronics; packaging; and more efficient power generation. Aluminum is also a vital component in defense applications used to protect national security, including armored vehicles and fighter jets. And while we believe there is the ability to produce enough high purity aluminum in the U.S. for defense applications, we see a risk to national security if there is not ample access to primary aluminum in North America or from other U.S. defense partners. In recent years, that supply has been threatened primarily due to one reason – the oversupply of aluminum being produced in China.

Alcoa's Position on Section 232

Alcoa seeks to compete on a level playing field—where all producers are held to the same standard: that of creating value by operating in a safe, cost-effective, and environmentally sound manner. We believe that if the United States wants to ensure an ample supply of primary aluminum to help protect national security, three steps should be taken:

1. Address overcapacity of aluminum in China,
2. Protect the U.S. aluminum industry's integrated, critical supply chain, and
3. Provide a competitive environment for the U.S. aluminum industry including regulatory reform; long-term, affordable energy; and direct investment, including investments in research and development.

Address China Overcapacity

In 2000, China produced only 10% of the global supply of primary aluminum. Today, that number is about 55%. From 2000 until the financial crisis, China increased its production year-over-year, while at the same time its economy was growing at a record pace. China was essentially consuming all the aluminum they were producing. As China's economic growth slowed, however, domestic Chinese capacity began to outpace its ability to absorb all its production. In fact, the primary aluminum surplus in

China grew from only 144,000 metric tons in 2010 to 1.5 million metric tons in 2015. This year, China's overcapacity is estimated to reach new heights, with a surplus of more than two million metric tons. That's just slightly below Alcoa's total global smelting operating capacity of 2.35 million metric tons and nearly half of all North American production in 2016. At the same time, the rest of the world is expected to have an aluminum deficit of about 1.5 million metric tons.

In total, Chinese domestic customers consume roughly 30 million metric tons of primary aluminum annually. When compared to the 2 million metric tons of excess primary, 4 million metric tons of net semi-fabricated exports, and 9 million metric tons of curtailed capacity, China's current overcapacity of 15 million metric tons is 50% of its total consumption. This is equivalent to the total current supply from North America, South America, Europe, and the Middle East combined.

We believe China is exporting its domestic problems. China unfairly subsidizes smelters to maintain employment and keep smelters on line when they should be curtailed. And while the Chinese government has committed to reducing production, in large part to meet environmental goals, there is a lack of credible data and transparency to show what actions have been taken. We believe that unfair subsidies for Chinese smelters persist – possibly in the form of tax breaks, loans, or lack of enforcement of policies on the books. Artificially cheap state-directed loans and coal, electricity and alumina for the Chinese aluminum sector violate international trade rules, undercutting global prices, and expanding China's global market share. The result has been a significant curtailing or shuttering of aluminum smelting capacity outside of China, with no greenfield investment in the U.S.

Because of overproduction in China, aluminum prices never fully recovered from the global financial crisis, and remain 25 - 30% lower than before the crisis. And that overcapacity has had tremendous impact on the number of aluminum plants operating and jobs here in the U.S. and elsewhere in the world. Alcoa has closed, curtailed or divested 43% of smelting capacity and 35% of refining capacity since 2007. In the U.S., this has impacted more than 1,500 jobs in New York, Washington, Indiana and Texas in just the last couple of years.

As such, the U.S. government should directly engage with the Chinese government to address the ongoing overcapacity problem in their aluminum industry and ensure that Chinese overproduction no longer spills out into the rest of the world.

Protect Aluminum's Integrated, Critical Supply Chain

Outside of China, the aluminum industry has an integrated supply chain essential to the health of the entire aluminum value chain. Unencumbered trade flows between our vital trading partners, including Canada and Europe, are critical to the success of the U.S. aluminum industry. Alcoa's smelters in Canada export 60% of their metal to the U.S., serving customers in 25 states and supporting our economy through downstream jobs. For example, Alcoa's primary aluminum produced in Quebec is shipped to Iowa, where our aluminum fabricator customers turn it into automotive sheet. Our billet from Quebec is used by plants in Cleveland to make truck wheels.

Because demand for aluminum is so strong for markets like automotive and construction, even if all idled primary aluminum capacity were restarted in the U.S., it would not be enough to fill the growing demand in this country. Our country has 1 million metric tons of idled capacity, but we currently face a

deficit of primary aluminum of 4 million metric tons. We need to protect vital supply chains and the 160,000 jobs that depend on them. Indeed, maintaining a diverse supply chain among longstanding allies and vital trading partners bolsters our national security. It doesn't hurt our national security.

Provide A Competitive Environment

Providing a favorable business environment that allows our operations in the U.S. to compete globally is also essential to the long-term viability of the U.S. primary aluminum industry. We must have efficient regulatory policies, competitive energy prices and an environment that allows our plants to compete fairly.

For example, on the environmental front in the U.S., we need regulatory policies that set realistic permit targets based on actual data rather than modeling programs that routinely produce results unverifiable in the real world. We need permitting processes to be updated to ensure efficient, timely processing of requests, and requirements should be based on what is achievable with today's technology so we can continue to invest in our facilities. Furthermore, projects that have no impact or positive net environmental impact should receive expedited review with a common-sense outcome.

The U.S. aluminum industry also faces power rates that are approximately twice as high per megawatt hour as those in neighboring Canada. Other countries that prioritize domestic aluminum production, including China, choose to offset natural disadvantages like this with direct government investment.

In addition, our production facilities would benefit from investment in innovative technologies in the form of a public-private partnership to advance our smelting industry to the next generation. With investment in research and development and commercialization of technological breakthroughs, we can work together to ensure the competitiveness of existing smelters and secure jobs in the U.S. By collaborating on advanced technology development, the U.S. aluminum industry can meet increasing demand from industries such as transportation, construction, and consumer goods for our lightweight, energy efficient product.

We encourage the U.S. government to look at how environmental, energy and investment policies could help bolster the aluminum industry in the U.S., ensuring we have ample supply of primary production that helps our national and economic security.

In conclusion, Alcoa greatly appreciates the U.S. government's sustained commitment to addressing the challenges facing our industry, including addressing overcapacity. We look forward to the findings of the Section 232 investigation and remain committed to continued engagement on these critical issues. We stand ready to provide any additional information required.

Thank you very much.

Testimony of
Mr. Daniel Langer
Vice President
PHB, Inc. of Fairview and Erie, PA
before the U.S. Department of Commerce
232 Investigation of Aluminum Imports on National Security

Thank you for the opportunity to appear on behalf of PHB Inc. with facilities in Fairview and Erie, Pennsylvania. Founded in 1906, PHB, Inc. is a U.S.-based supplier of aluminum and zinc die castings, CNC die casting machining, molds and tooling. We ask that the Department consider the impact its decisions will have on the entire supply chain, particularly American defense suppliers using aluminum.

An ITAR-registered company, PHB has over 500 employees in Northwest Pennsylvania, manufacturing castings for some of the largest corporations in the United States. Our employees make critical products for the defense, automotive, appliance, and lighting industries, among others. Last year alone, we produced more than 15 million castings and poured nearly 50 million pounds of alloy.

With over 100 years of aluminum die casting experience, our company is one of the global leaders in aluminum castings. We typically use Aluminum 360, 380, 383 and 413. We also use Zinc-Aluminum ZA-8, ZA-12 and ZA-27. As a supplier to the U.S. military, we manufacture military radio castings used by all branches of the U.S. military and special operations forces around the word.

Aluminum consumers like PHB in Pennsylvania are critical to national security. Not only are we the customers setting the demand, but we are the U.S. suppliers helping meet the needs of our warfighters. PHB is a critical part of the defense industrial supply chain, and any disruptions in our raw materials can send a ripple effect throughout the military.

In fact, we are already facing significant challenges ourselves from imports of aluminum castings from India. While I know Washington focuses much of its attention on excess Chinese aluminum, and rightly so, I encourage the Department to look at imports of aluminum in downstream products from around the globe.

Having a strong and growing domestic aluminum supply is critical not only to national security, but also to economic growth. While PHB does not import any aluminum directly, we do purchase globally produced secondary aluminum through our domestic suppliers. This means we rely on globally priced and readily available raw materials. We are very concerned that restricting imports or placing tariffs on aluminum will simply lead to more castings coming into the U.S. with foreign aluminum - all duty free. Shifting the injury to another part of the defense supply chain will not help U.S. aluminum producers, but cause all of us to lose.

We strongly urge the Department to not only look at the impact of imported aluminum on national security, but also on products primarily manufactured from aluminum. Downstream suppliers like us are often family small businesses, and we already face a number of challenges.

Our company continues to grow to meet the needs of our defense and other customers. But we are very concerned about an increase of imports castings and other aluminum containing products from India, China, and elsewhere. We ask that the Department take a broader look at the aluminum market place and not take action that will shift the injury to our industry by giving imported castings with cheap aluminum a free pass.

Thank you for the opportunity to testify on this important issue.

Written Submission by Arconic, Inc.
United States Department of Commerce's
***Section 232 National Security Investigation of Imports of Aluminum* Written Testimony**
June 20, 2017

Arconic appreciates the opportunity to provide comment to the U.S. Department of Commerce's investigation into the national security implications of aluminum imports under Section 232 of the Trade Expansion Act of 1962. We value the Administration's engagement with the aluminum industry and interest in our support to defense platforms and critical infrastructure. Arconic is proud to be a partner to the U.S. military providing engineered products that increase survivability, reduce weight and enhance performance across air, land and sea platforms. We submit that a healthy U.S. aluminum industry is critical to national security and that solutions identified during this investigation should support all segments of the aluminum value chain, including mid- and downstream value-add producers. We look forward to working with the Administration to ensure an outcome that supports U.S. competitiveness and advances our national security.

Legacy of U.S. Manufacturing Innovation

Arconic works with our customers to solve complex engineering challenges, transforming the way we fly, drive, build and power. Our businesses have helped shape the aerospace, automotive, and building industries since the days of the Wright brothers and Henry Ford, and the first modern downtowns. Today, our aluminum engineered solutions are found on cars from bumper to bumper, on aircraft from nose to tail, and across modern skylines from New York to Seattle. We constantly seek out ways to advance cutting-edge technologies, from metal powders optimized for 3D-printed aerospace components to next-generation automotive alloys that are 40 percent more formable and 30 percent stronger than those used today. Arconic is tremendously proud of our 22,750 employees in the United States who are critical to our success. Since 2009, Arconic has invested more than $3.1 billion to modernize our U.S. facilities, adding more than 2,600 high-quality, advanced manufacturing jobs in the process.

Economic Impact and Face of the Aluminum Sector in the U.S.

Across the nation, the aluminum industry directly employs 161,000 workers and generates $75 billion in direct economic output and an additional $111 billion in indirect economic output. Non-primary segments of the industry represent 97 percent of the jobs in the sector and produce intermediate and finished aluminum goods like extrusions, forgings, flat-rolled products, forged wheels, and jet engine fan blades. Between 2013 and 2016, growth in these segments led total jobs in the industry to increase 3% from 156,744 to 160,888. The number of jobs involved in sheet, plate, foil, extrusions, and coatings operations saw an 8% increase in employment, while those related to foundry operations grew 14% and metal service centers by 6%.

Investing and Innovating to Strengthen the U.S. Defense Industrial Base

Arconic is proud to serve as a leading aluminum products supplier to U.S. Department of Defense platforms and original equipment manufacturers, delivering affordability and performance through our innovation to every branch of the U.S. military. Today Arconic aluminum rolls, flies and sails on over 80 major defense programs of record produced across 45 plants in the United States. Armor plate manufactured at Davenport, Iowa can be found on nearly every new U.S. combat and tactical vehicle

program of record. Single-piece aluminum bulkheads forged in Cleveland, Ohio, form the 'backbone' of the world's most advanced military aircraft – the F-35 Joint Strike Fighter – and save 300 to 400 pounds per jet and up to 20 percent in costs. The demand for aluminum on critical U.S. military platforms is expected to grow significantly over the next five years, driven by the planned ramp up of programs like the Joint Strike Fighter and Joint Light Tactical Vehicle. Demand for cold-rolled aluminum alone – for armor plate and marine applications – is expected to triple by 2021.

We collaborate on R&D with the U.S. Army, Air Force, Navy and Marine Corps on alloys and manufacturing processes that improve survivability, mobility, and performance. For example, in partnership with the Defense Advanced Research Projects Agency and the Army Research Laboratory, we developed the largest single-piece, forged aluminum hull designed for future ground combat vehicles. By eliminating welded seams used in today's manufacturing processes and tailoring thickness where needed to maximize protection, we can provide troops with twice the blast protection of a traditional welded hull. We work with the U.S. Air Force to develop next-generation propulsion and airframe structural components for aircraft through the Metals Affordability Initiative, a consortium dedicated to leveraging government and industry resources to reduce costs and lead time associated with producing metallic aircraft components. We helped re-engineer the flight deck and mission bay tie downs for the Littoral Combat Ship and Expeditionary Fast Transport vessel, taking tons of weight off those platforms.

Arconic has a long history of manufacturing partnerships with the U.S. Department of Defense, including those that helped build the world's widest aluminum rolling mill in Davenport, Iowa and the 50,000-ton forging press in Cleveland, Ohio, which produces some of the largest closed die forgings for the aerospace and defense sectors in the world. Through these investments, we help ensure robust industrial capacity, supporting military readiness and enhancing the country's technological edge in manufacturing processes and material solutions. Arconic has continued to invest in these assets over the years, including a recent $100 million upgrade to the Cleveland forge and nearly $500 million in investment at Davenport, Iowa over the last five years.

Arconic's defense portfolio is overwhelmingly commercial item, leveraging the best of our innovation developed for commercial applications to meet the unique needs of the warfighter. Our defense products are manufactured across hundreds of commercial flowpaths as we do not have dedicated defense assets. To best maintain the health of our advanced aerospace and defense product lines, we rely on a strong backlog across our product portfolio to include commercial business in automotive, industrial, and packaging. The allows us to optimize mix across our plants and produce our parts in the most efficient and cost effective manner possible.

Regarding high purity aluminum, new defense platforms have a production ramp rate that will generate more demand and requirements that call for higher purity aluminum than legacy defense programs. This increase is fueled by important programs that are in low-rate production moving to full-rate production in the years ahead, including the Joint Strike Fighter and Joint Light Tactical Vehicle. Arconic created a refining process that produces high purity aluminum using high-yield fractional crystallization though R214 units at our rolling mill in Davenport, Iowa. As the only industrial scale producer of high purity using this process, we currently produce about half of our current demand. Further, Arconic accounts for a majority of total U.S. demand of high purity aluminum. The R214 process is reliable, efficient and can produce the highest levels of purity.

Finally, U.S. mid- and downstream producers rely on primary aluminum imports. The majority of imports are Canadian in origin and produced at factories that are considered part of the U.S. defense industrial base by statute – Title 10 U.S.C. §2500(1). Moreover, it is a preferential source from a market perspective due to its low transport costs to the U.S. and reliable energy supply found in native hydroelectric power. Even if primary producers brought all U.S.-based smelters back on line tomorrow, we would not have enough primary aluminum to satisfy domestic demand. Action on primary aluminum imports would do little to address global overcapacity and potentially harm the U.S. defense industrial base by disrupting the integrated North American supply chain.

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Arconic looks forward to working with the U.S. Department of Commerce and Administration on this investigation. We firmly believe that a sustainable and targeted solution that keeps the overall aluminum industry healthy and considers the needs of producers across the aluminum value chain is critical to supporting the U.S. defense industrial base.

Section 232 National Security Investigation of Aluminum Imports
Testimony of Billy Hughes

June 22, 2017

Good morning. My name is Billy Hughes. I am a proud veteran of the U.S. military and have worked in the aluminum industry for the past 10 years. I appreciate the opportunity to speak to you today about the importance of domestic aluminum production to U.S. national security and why Section 232 relief is necessary for our industry.

I have been a Reduction Services Superintendent at Century Aluminum's Hawesville, Kentucky facility for the past two years. In this role, I administer the activities of the potlines as well as the cell relining of those pots. I am on the floor day in and day out to ensure that we produce the highest quality aluminum products possible. Prior to this position, I worked for eight years at Alcoa's Warrick, Indiana smelter, both as a process control operator and a potline supervisor. I left Warrick in 2015, just before the smelter was forced to shut down in 2016.

For the past 10 years, aluminum has been a big part of my life and the lives of my friends and family. I am grateful for my job at Hawesville and am luckier than most to still have a job in this industry. However, I am concerned that without much needed relief, this will not be the case for much longer.

What was once a thriving industry, the domestic primary aluminum industry has all but disappeared. In my time in the industry, I saw how conditions

deteriorated as China expanded production and crashed prices. As just one example, in the industry, our bonuses are often based on company performance. This means that as the market started to get bad, so did bonuses. Sometimes there were no bonuses. Conditions got so bad that by early 2016, smelters throughout the industry were closing. My former smelter at Warrick was one of them, eliminating more than 300 jobs, including my brother's.

Today, I feel fortunate to work at Hawesville – the last remaining U.S. smelter that makes high-purity aluminum. However, even that facility is at risk. Over the past five years, Hawesville has issued two separate notices that it would permanently shut down operations in 60 days. Lucky for us, on both occasions, the smelter was able to pull its business back from the brink, but not without layoffs. In the past two years alone, the facility has been forced to let hundreds of workers go and has been scrapping unused machinery for cash to help get by. Hawesville could easily become the next aluminum smelter to go under unless relief is granted.

I would stress that the production of high-purity aluminum requires highly technical skills that are not easily replaceable. The high-purity production process is complex and leaves no room for error. The process is part art, part science. Even the slightest amount of impurities can throw the entire pot off. When these jobs go, so do the specialized skills needed to produce the high-purity aluminum.

The domestic industry's problems have taken its toll on its workers and families. Many who have lost their jobs remain unemployed to this day. Not a week has gone by where I don't receive a call from a former colleague looking for work. Our communities have also suffered. Like Hawesville, smelters are typically located in small family-friendly towns. When their largest employer is forced to shut-down or reduce jobs, the whole town feels it.

As a veteran of the U.S. army, I know first-hand how important aluminum is to the men and women that put their lives on the line for their country. I served in both Operation Enduring Freedom and Operation Iraqi Freedom following September 11. When I first arrived in Iraq in 2003, Humvees were literally folding up like soda cans. They were simply no match for an IED. We were losing our soldiers left and right because our vehicles provided little protection from roadside bombs. At the time, members of my unit were forced to line our vehicles with scrap metal, sandbags, and bulletproof vests for added protection.

By the time that my younger brother arrived in Iraq for duty in 2008, conditions had thankfully improved. The Army began using high-purity aluminum alloy in its vehicles, which is significantly more effective at absorbing a blast. One can only imagine how many U.S. soldiers' lives were saved because of this switch.

I fully agree with Secretary Ross that primary aluminum and the high-purity aluminum produced by the Hawesville smelter is a "hugely important thing to

defense." My fear is that if we allow imports to continue entering the U.S. market and harming U.S. production and workers, the domestic aluminum industry will become a thing of the past and our national security will suffer. It is critical that we maintain the capability to produce aluminum, and are not forced to depend on unreliable and unsafe sources of supply to meet this need. I know how important aluminum is to protecting our soldiers and wouldn't want to depend on imports from the Middle East or elsewhere during a time of war or other national emergency. For these reasons, I ask that you grant broad and immediate Section 232 relief for the domestic aluminum industry.

On behalf of myself, my colleagues and friends, and our families, thank you for your time and attention.

Testimony of Alf Barrios, Chief Executive, Rio Tinto Aluminum with respect to the Section 232 National Security Investigation of Aluminum Imports

Hearing of June 22, 2017

Good morning, my name is Alf Barrios and I am the chief executive of Rio Tinto Aluminum. I sit on the Rio Tinto Executive Committee and serve as the company's country sponsor for Canada and the United States.

Rio Tinto appreciates this opportunity to offer comments to assist the Department of Commerce and Department of Defense in the Section 232 national security investigation of aluminum imports. Rio Tinto commends President Trump, Secretary Ross and Secretary Mattis for focusing attention on the vital role that aluminum plays in the United States defense capability. My comments today will highlight the essential nature of aluminum to the North American integrated supply chain that is the basis of that capability.

I. Rio Tinto background

Rio Tinto is a leading global mining and metals company that focuses on finding, mining and processing essential mineral resources. We have been in business for more than 140 years, and some of our longest-operating assets are located in the United States. We produce a diverse suite of minerals and metals that are the necessary inputs for everything from telecommunications to transportation. One of our major products is aluminum, largely produced in North America.

A. Rio Tinto's operations in the United States

Rio Tinto is proud to have operations in the United States that have provided critical minerals to U.S customers for well over 100 years. The heart of our global borates business is based in Boron, California, where the Boron mine began operations in 1872. Our Bingham Canyon mine in Salt Lake City, Utah is a fully integrated copper, gold and molybdenum mine that has operated for 110 years. At this site, Rio Tinto operates one of only three copper smelters in the United States.

Rio Tinto is also investing for the future, prioritizing mineral exploration in North America that will support future U.S. manufacturing demand. To date, Rio Tinto has invested over $1.3 billion to develop the Resolution Copper Mine in Superior, Arizona. This mine will require $6 to 8 billion of investment over the next several years, and is one of the largest private investments currently pending in the U.S. permitting process. Rio Tinto's operations, such as those in Utah, California, and Arizona are strong contributors to the United States economy and employment.

Rio Tinto's role in the North American supply chain

Rio Tinto is a significant contributor to the integrated manufacturing supply chain in North America. Rio Tinto is the largest producer of primary aluminum in North America, and our smelters have a long history of supplying U.S. manufacturers, particularly U.S. defense-related manufacturing.

The integrated North American supply chain provides significant benefits for the United States economy and American workers. Aluminum produced in Canada is a vital input for U.S manufacturers.

II. Historic defense cooperation between the United States and Canada

The United States and Canada have treated each other as indispensable partners in national defense for nearly a century. The Canadian-American defense industrial alliance, known as the Defense Production Sharing Program, pre-dates the U.S. entry into the Second World War. In 1940, Canada and the United States established the Permanent Joint Board on Defense, which still operates today. The Hyde Park Declaration of 1941 allowed American-made war material to be produced in Canada and provided to Great Britain.

Close defense coordination between the U.S. and Canada continues today. For over twenty years, the U.S. has defined its national technology and industrial base to include Canada. In 1987, the two countries established the North American Technology and Industrial Base Organization, which promotes a cost-effective, healthy technology and industrial base that responds to both countries' security needs. As these actions make clear, Canada is a strong partner to the United States in national security.

III. Rio Tinto supports the U.S. defense and manufacturing bases

Finally, Rio Tinto plays a critical role in supporting the U.S. manufacturing base. Seventy-five percent of Rio Tinto's Canadian aluminum production is shipped to the U.S., where we have sales in more than 35 states. Among many historical examples of Rio Tinto's operations in North America, and their connection to the defense supply chain, is our Shipshaw hydropower plant. This plant was built in 1943 with encouragement and support from both the U.S. and Canadian governments. At that time, the plant proved vital in the ramp-up of allied defense manufacturing capability. Today it is a key component of our Saguenay-Lac-Saint-Jean hydroelectric power network, which feeds the aluminum smelters that provide reliable aluminum supplies to North American customers.

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The United States has long considered Canada's resources and manufacturing capabilities to be a vital part of the North American defense industrial base. Consistent with U.S. law and policy, Rio Tinto has long been a proud partner to the U.S. government, private industry, and local communities. We look forward to continuing and deepening these relationships.

Flexible Packaging Association (FPA) Testimony
Public Hearing
for
Section 232 Investigation on the Effect of Aluminum Imports
on U.S. National Security
June 22, 2017

My name is Alison Keane, and I am President and CEO of the Flexible Packaging Association (FPA). FPA is the voice of U.S. manufacturers of flexible packaging and their suppliers. The association's mission is connecting, advancing, and leading the flexible packaging industry. Flexible packaging represents over $30 billion in annual sales in the U.S. and is the second largest and one of the fastest growing segments of the packaging industry. The industry employs over 80,000 workers in the United States. Flexible packaging is produced from paper, plastic, film, aluminum foil, or any combination of these materials, and includes bags, pouches, labels, liners, wraps, rollstock, and other flexible products. With respect to aluminum foil, this packaging includes everyday food and beverage products such as Hersey Kisses; Pringles; Dannon Yogurt; and Capri Sun, as well as health and beauty items and pharmaceuticals, such as Tylenol; Clinic Plus; and Gillette Shaving Cream. Aluminum foil is also used by the flexible packaging industry for medical device packaging to ensure that the products packaged, such as absorbable sutures, human tissue, and artificial joints, maintain their efficacy at the time of use.

This Section 232 investigation, initiated under the Trade Expansion Act of 1962, seeks to determine what, if any, effects imports of aluminum have on national security. FPA is not aware of any impacts aluminum foil imports for use in the packaging industry has on

U.S. national security. FPA supports efforts to protect domestic manufacturing and ensure national security. However, any such efforts must consider the impact and consequences on all U.S. manufacturing industries. Accordingly, the scope of these actions must be limited to address the specific objectives. Aluminum foil imports necessary for the packaging industry, and without application for national defense, should be excluded from consideration. In its investigation, the Administration is to consider a range of factors related to national security, including the economy and the effects of foreign competition on the economic welfare of domestic industries, including impacts on employment. Any import restrictions on aluminum foil will have a significant negative impact on the flexible packaging industry and its employment in the U.S.

This investigation is paralleling an International Trade Commission (ITC) investigation of Chinese aluminum foil imports based on a petition from The Aluminum Association, claiming that dumped and subsidized aluminum foil from China is causing or threatening injury to the domestic aluminum foil industry. The ITC petition seeks steep import duties exceeding 140% to be applied to imported Chinese aluminum foil. The unintended consequences of potential remedies under this investigation, combined with any imposed through the ITC probe on the ability for the flexible packaging manufacturers to get the aluminum foil necessary to create innovative and functional packaging for food, beverages, candy, and pharmaceuticals, would be the loss of flexible packaging jobs in the U.S.

Aluminum foil used by the flexible packaging industry is not manufactured in the U.S. in the quantities and qualities needed. Failure to invest, and quality lapses, including gauge, width, and lack of appropriate alloys all contribute to the fact that the U.S. producers of aluminum foil are not able to serve the U.S. flexible packaging industry. In fact, the ITC, at

its preliminary hearing on March 30, 2017, found that domestic ultra-thin foil production "may be limited or nonexistent." The ITC also found that "Despite their [The Aluminum Association's] arguments about economic harm by imports, domestic aluminum foil manufacturing jobs declined by only "137 workers from 2014-2016." To put this number in perspective, again, domestic flexible packaging manufacturing jobs are estimated at 80,000. The negative impact on American jobs of cutting off the supply of aluminum foil for flexible packaging manufacturing will far outweigh any job benefits that are envisioned by the ITC and Section 232 investigations. Thus, high tariffs or quotas will only lead to U.S. companies sourcing aluminum foil from other non-U.S. manufacturers; Chinese suppliers of printed or otherwise converted aluminum foil products entering the U.S. market, since these products are not included in the actions; and/or U.S. companies moving flexible foil packaging production outside the U.S., thereby reducing U.S. jobs. There is simply no scenario where U.S. aluminum foil manufacturers benefit, and in most cases, U.S. flexible packaging jobs will be lost.

FPA shares the same goal as the domestic aluminum foil producers who want more American jobs and understands the importance of protecting national security. The Administration should find ways to work together to improve our country's competitiveness. Everybody loses in unfair trade cases, especially the American consumer. The ITC's preliminary findings make it clear that this case is not going to result in any benefit to aluminum foil producers and the unintended consequences of including aluminum foil in any Section 232 remedy will be more damaging to the U.S. manufacturing industry and the economy than the benefits sought.

Thank you.

Can Manufacturers Institute

Oral Presentation on Section 232 National Security Investigation of Imports of Aluminum

Presented by Robert Lauterbach

June 22, 2017

Thank you Secretary Ross for inviting me to speak today.

My name is Robert Lauterbach, and I am the Vice President of Global Sourcing at Ball Corporation. Today, I am testifying on behalf of the Can Manufacturers Institute, CMI, whose member companies produce approximately 90 billion aluminum beverage cans every year, resulting in $11B in economic activity, and employ 10,000 individuals in 23 states. We respectfully request that Commerce and President Trump exclude the Aluminum Products we purchase from any upcoming trade action.

To make the products we sell, we must purchase large quantities of aluminum cansheet, aluminum slugs, and aluminum ingot (herein after referred to as Aluminum Products). The names of these products along with their corresponding HTS codes are provided in the hand-out.

To assist Commerce in your analysis, we offer following reasons why you should exclude these Aluminum Products from any tariff or other trade remedy.

1. The Aluminum Products that we purchase do not have defense applications.

2. US aluminum producers have shifted their focus away from the lower value added commodity products that we purchase to higher margin, higher value added aluminum products, such as those used by the US Military. On the other hand, the products that ***are*** being imported into the US in large quantities are lower value added commodity products without military applications, such as aluminum foil used for food, aluminum fin stock for the HVAC industry, and building and construction aluminum.

3. We purchase the vast majority of our cansheet from the US, or in the case of aluminum ingot, from long-time strategic allies such as Canada. In fact, only 2% of the Aluminum Products that we import into the US come from China.

4. Bauxite, the main source of aluminum, is not mined in the US. Because of high energy costs and the low concentration of bauxite in US soil, it will not be mined in the US, even with a tariff on imported aluminum.

5. The importation of bauxite, alumina, and the Aluminum Products we purchase is properly characterized as blameless trade, and it would be unfair to punish US based companies who depend on such blameless trade. The decline in US primary aluminum production is a result of an increase in US energy prices relative to other regions, an exponential increase in domestic aluminum scrap availability, lack of investment in smelting assets, and a long-term decline in primary aluminum consumption per capita.

6. Imposing tariffs on the Aluminum Products we purchase would have the unintended consequence of harming US-based can manufacturers, while benefitting foreign cansheet companies doing business in the US. Let me explain: three of the four major suppliers of aluminum cansheet in the US are foreign-owned companies - Novelis, Constellium and Tri-Arrows Aluminum - and tariffs will raise prices and increase their profits but not make the US aluminum industry any stronger.

7. The trade action proposed would likely result in the loss of high paying can manufacturing jobs and compromise the competitiveness of the US downstream aluminum users.

8. Trade remedies would have a chilling effect on investments in our industry. Over the last 5 years, CMI companies invested well over $1B in US manufacturing facilities. Even a small tariff will result in greater uncertainty about prices, supply, financing, and would dramatically curtail investment and hiring in the US.

9. Finally, a tariff on Aluminum Products would have a two-fold impact: First, consumers would pay more, ultimately harming US consumers that rely on affordable canned products; and second, our products would be unfairly taxed making cans less competitive when compared to plastic and glass.

With these concerns in mind, we respectfully request that Commerce draw a distinction between the Aluminum Products that we purchase, and those very different forms of advanced Aluminum Products with military and national defense applications. Drawing this distinction would be in the best interests of the companies that make up CMI, our valued employees, and American consumers.

Testimony of James A. McGreevy III
President and Chief Executive Officer
The Beer Institute

Thank you for this opportunity to provide the U.S. beer industry's views on the Department's investigation. I speak today on behalf of the Beer Institute. The Brewers Association and the American Beverage Association join us in our written submission.

The Beer Institute represents American brewers of all sizes, as well as importers and industry suppliers. There are currently over 5,000 brewers responsible for billions of dollars in American trade and commerce. Brewers and their wholesale and retail partners directly or indirectly employ 2.23 million Americans who earn more than $103 billion in wages and benefits.

A majority of the volume of beer sold in the U.S. comes in aluminum cans and aluminum bottles. While 98% of our cansheet is domestic, imported primary aluminum is an essential input. Tariffs or other measures limiting the importation of primary aluminum or cansheet will hurt the economic activities and jobs our industry supports.

Imports of primary aluminum for cansheet manufacture do not threaten U.S. national security. First, U.S. smelters and reliable U.S. trading partners can satisfy military demand. Second, the competitive challenges that U.S. smelters face are the result of factors unrelated to imports – aging facilities, high energy costs, and the strong U.S. dollar.

We urge the Secretary to look at solutions other than tariffs or import restrictions. But if the Secretary does recommend tariffs or import restrictions, we ask for the exclusion of cansheet and its inputs. Our written comments will include a more specific list of the most relevant products.

Today, I would like to speak to another issue that should be part of the Department's inquiry: serious irregularities in the trading of primary aluminum contracts and in the storage of aluminum at warehouses approved by the London Metals Exchange (the "LME"). These irregularities seriously distorted the aluminum market and cost aluminum users billions of dollars.

This issue dates to 2010, when aluminum users, industry analysts, U.S. and foreign regulators and Congress first began to express concerns about the aluminum market.

As background, most industrial users of primary aluminum normally buy metal directly from producers on direct, long-term contracts. The LME is a market of last resort. Smelters use the system to sell excess stock when there is oversupply, and users turn to it in times of extreme shortage. Direct supply contracts also reference the LME price. A U.S. aluminum user pays the LME price plus a physical market premium, which everyone calls the "Midwest Premium." The Midwest Premium should reflect the full logistical cost of sourcing metal from the most viable supply hubs, which might be a regional producer, an LME warehouse, or a major off-shore supplier.

Starting in 2010, however, the aluminum market took a serious turn. Owners of LME warehouses began to stockpile primary aluminum. They did this by paying aluminum smelters to overproduce in an already oversupplied market. The warehouses competed directly with industrial users for primary aluminum. This metal was sold under warrant through the LME and went into storage in LME warehouses, not into the physical market.

A second practice was the payment of financial incentives to warrant holders, mostly financial investors with primary aluminum stored in LME warehouses. The goal was to get the

metal into a warehouse exit queue and once loaded out, right back into an affiliated LME warehouse.

These so-called "merry-go-round" transactions inhibited the normal flow of metal to the market. The warehouses were effectively hoarding the metal and withholding it from the open market. This artificially inflated the overall price of aluminum, increasing the financial investors' returns.

The combined impact was to eliminate the LME system as a market of last resort. No one could buy primary aluminum through the LME without extraordinary delays – as long as two years.

Although production of primary aluminum exceeded consumption by one to two million tons per year, the market behaved as if there was a shortage. Aluminum flowed into the LME warehouses, but the freely available supply decreased.

The manipulation also had a dramatic effect on the Midwest Premium. In the first three weeks of 2014 alone, the Midwest Premium experienced a dramatic 67 percent increase! And, in January 2015, it hit an all-time high.

The grossly inflated Midwest Premium became an outsized factor for every aluminum user's cost and risk.

Aluminum users pushed the LME to enact rules reforms. Those who benefitted from the financial incentives and the increased Midwest Premiums resisted.

In November 2014, the U.S. Senate Permanent Subcommittee on Investigations issued a report on this problem. It concluded that there were "troubling issues involving conflicts of interest, market distortions, and the potential to gain unfair trading advantages" which "likely

added billions of dollars in costs to a wide range of aluminum users, from beer makers to car manufacturers to defense companies that make warships for the Navy."

The LME enacted reforms that resulted in significant market corrections, including a 71% drop in the Midwest Premium by mid-2015. The market began normalizing.

Manipulation of the market may not, however, be over. We've seen new spikes in the Midwest Premium over the last nine months, again in a way that appears disconnected from market fundamentals.

There are two reasons I want to share this background.

First, as the Secretary considers whether to recommend import adjustments, keep in mind the negative impact that restrictions on supply of primary aluminum will have on our industry and that of other aluminum users. We just exited a period when artificial restrictions in the market distorted prices and hurt aluminum users. Import restrictions would likely have a similar effect, leading to higher costs and, in turn, lost sales. Lost sales would mean lost government revenue and job losses.

Second, a high Midwest Premium coupled with a strong U.S. dollar makes the U.S. market attractive to global aluminum suppliers and draws additional imports. Therefore, if the concern is imports of primary aluminum, it would be a good idea to evaluate the role manipulation of the Midwest Premium played in creating the current situation.

The Department has trade remedy tools that it can use in a targeted manner to address unfair trade practices – as it did in its recent scope determination concerning Chinese aluminum pallets and its recently initiated investigation of aluminum foil imports from China. We urge the Secretary to recommend the continued use of such targeted actions, consistent with U.S. trade remedy laws and regulations and with our international commitments.

We also urge the Secretary to consider that energy costs are the key factor driving smelter competitiveness. U.S. producers are at a severe energy cost disadvantage relative to their foreign competitors. Lower energy costs help smelters and may encourage investment in U.S. rather than other countries.

Thank you for the opportunity to appear before you today. While aluminum imports do not threaten our national security, there are actions that the Secretary should recommend to the President – including further scrutiny of Midwest Premium manipulation and policy changes focused on lowering energy costs to smelters – that will improve the competitiveness of the domestic aluminum industry and industries, like ours, that need aluminum. Thank you.

Section 232 Investigation on the Effect of Imports of Aluminum on U.S. National Security

Written submission of Hydro

Hydro is a global aluminium company with production, sales and trading activities throughout the value chain, from bauxite, alumina and energy generation to the production of primary aluminium and rolled products as well as recycling. Headquartered in Norway, the company has 13,000 employees involved in activities in more than 40 countries. In the US, Hydro is a supplier of rolled aluminium and other metal products. The company has two dedicated aluminium remelting facilities in Kentucky and Texas with 127 employees in total. In addition, Hydro operates a technology centre in Zeeland, Michigan. The research conducted is to find and improve advanced solutions for aluminum in our end markets[1].

Hydro has serious concerns regarding the distortion of trade flows resulting from overcapacities in the aluminium market caused by state interventions, especially in China. Therefore, we welcome all evidence-based inquiries into the current situation faced by the aluminium industry. The crisis caused by overcapacity requires decisive governmental reaction. However, Section 232 investigation and imposition of unilateral trade barriers are not the appropriate tools to address aluminium overcapacities. Any trade barriers such as additional tariffs or quotas would lead to market distortions and diversion of trade from the US to other parts of the world and would fail to provide a lasting solution.

In the aluminium industry, a significant number of companies have operations on both side of the Atlantic. These companies, Hydro being one of them, have intra-company trade flows, they import and export, and conduct R&D on both continents. Such companies would be particularly negatively affected by imposition of trade barriers by the US. Moreover, the US has a structural deficit position on aluminium. Hence, introduction of tariffs or quotas would result in higher prices for American customers, such as the automotive sector, and lost revenues for US companies exporting to and having operations in Europe due to trade diversions (i.e. indirect consequences).

Any outcome of the Section 232 investigation must avoid unintended consequences for the integrated US aluminium supply chain. Tariffs or quotas imposed on European (EU/EEA) or Canadian aluminium would be examples of such unintended consequences. Both Canada and Europe have been long-standing commercial and military partners of the US, and are characterized by strong market economies and legal systems based on the same principles. The Canadian and European aluminium industry stand in fair competition to each other and to their American counterpart and they do not pursue any unfair trading practices. Therefore, we would like to kindly request the Department of Commerce to exclude transatlantic imports from the scope of any potential measures introduced resulting of the Section 232 Investigation on the Effect of Imports of Aluminum on U.S. National Security.

Finally, we would like to encourage the US Administration to address the fundamental cause of the global aluminium crisis which is the overcapacity in primary aluminium present stemming from practices which are not compliant with the international trade law. The request from March 2017 to the G20 countries from the aluminium associations of the US, Canada and Europe to handle the overcapacity, is one route. Another route is utilising the WTO dispute settlement system like the

[1] Hydro is also 50% owner of the aluminium extrusion company SAPA, which has 23.000 employees worldwide and over 6.000 in the US.

United States' WTO complaint against the alleged Chinese subsidies to primary aluminium producers launched 12 January 2017. The WTO-dispute settlement mechanism is based on clearly defined and accepted rules and will not cause market distortions.

Testimony of
Garney B. Scott III, President and CEO, Scepter, Inc.
United States Department of Commerce
Section 232 Investigation on the Effect of Imports of Aluminum on U.S. National Security
June 22, 2017

Thank you. My name is Garney Scott. I am the President and CEO of Scepter, Inc. My company is primarily engaged in the recycled aluminum market. I am here today in my capacity as Chairman of the Aluminum Association, a position I have been privileged to hold since October 2015.

The Aluminum Association represents the entire aluminum value chain – from primary producers, to recyclers, to fabricators, and their suppliers. Our members employ 161,000 workers have manufacturing operations in 35 U.S. states, and account for 70 percent of the aluminum and aluminum products shipped in North America, creating $186 billion in economic activity.

The domestic industry remains a leader in innovative aluminum technologies and applications, but is at a juncture where it will either be able to take advantage of growth opportunities, or will continue to be irreparably injured by unfair trade practices that undermine its ability to do so. Our industry has been hurt, and its future is threatened by global oversupply. More specifically, the U.S. industry is being harmed by massive Chinese overcapacity resulting from substantial subsidies by the Government of China, such that China's capacity now far exceeds its domestic demand.

China's huge and growing aluminum oversupply has distorted the world market and adversely impacted U.S. producers of both primary and downstream products. Chinese oversupply has put severe downward pressure on world prices, which in turn has resulted in the shuttering of U.S. aluminum smelters and semi-fabricating facilities.

We have major concerns about China's rapid and aggressive expansion into value-added downstream products and their history of circumvention of U.S. duties through misclassification and/or transshipment through third countries. To bring its production into line with its domestic needs, and not export its oversupply, China needs to eliminate market-distorting policies and close or idle, at least 2MM metric tons of smelter and semi-finish annual plant capacity.

The trends in Chinese capacity, production, and exports have had enormous negative impacts on the U.S. aluminum industry, and have adversely affected an industry that is a vital component of our U.S. defense industrial base. In order for the U.S. aluminum industry to supply these defense needs and continue to provide jobs in our communities, we need to be competitive and economically healthy.

Absent actions that ensure robust and healthy commercial markets in the United States for aluminum and aluminum products, domestic producers will not be able to sustain their mills and facilities that also produce aluminum products that are vital for defense applications.

The U.S. aluminum industry embraces competition that is fair and transparent. We believe that it is vital that the Chinese government:

- Address the negative effects of long-running rampant overcapacity in both the primary and downstream sectors by closing smelters and semi-fabricating mills until demand can meet

supply – this includes, at a minimum, forcing inefficient, unpermitted, and antiquated facilities to close; and

- Pursue policies that align with its own stated sustainable development goals and eliminate subsidies, lending, and other incentives that artificially support its aluminum industry, and its resulting pricing practices that negatively affect world markets through its exporting of aluminum.

A 232 remedy should address the negative impacts of Chinese overcapacity in the United States and help protect an industry that is vital to the country's national and economic security. U.S. border measures will not fully address the problems we face because the domestic aluminum industry competes globally and has international supply chains.

Unless a broader agreement is negotiated to reduce and eliminate the massive overcapacity in China, the negative effects will persist and continued to threaten the U.S. industry's long-term health and vibrancy.

Thank you, Mr. Secretary.

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Section 232 National Security Investigation: Aluminum Imports

Steve J. Casey
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Introduction

Bemis Company, Inc. ("Bemis"), a manufacturer of packaging headquartered in Neenah, Wisconsin, believes it has a useful perspective to provide to the Secretary of Commerce and the Department of Commerce as they develop their analysis and recommendations for the President pursuant to the Section 232 national security investigation of aluminum imports. Bemis is concerned that potential measures resulting from the aluminum investigation could inadvertently have a negative impact on the supply of aluminum foil used in manufacturing flexible packaging in the United States, with potentially negative consequences for Bemis' customers, competitive position and employment.

Any import restrictions on aluminum foil, and especially the ultra thin foil used in flexible packaging, could negatively affect our business in the United States, given that (1) there is not adequate capacity in the United States to meet our quantitative and qualitative needs, and (2) our products compete with imported packaging that would not be covered by any measure impacting foil imports. Accordingly, Bemis respectfully submits that aluminum foil should be excluded from any eventual measures recommended to the President pursuant to the investigation of national security effects of aluminum imports.

Bemis, its products and its employment

Bemis manufacturers packaging for the largest food, consumer products, and medical device companies in the world. Though we are not a household name, our products are found in virtually every isle of the grocery store. Our products keep the food you buy safe and fresh through distribution and keep patients safe during surgery. We have 59 facilities in 12 countries and about 17,500 employees worldwide. Within the United States, Bemis has 31 manufacturing plants in 14 states and almost 9,000 employees. The states with the largest number of Bemis employees are Wisconsin, Indiana, Ohio and Pennsylvania.

As a core part of its packaging business, Bemis uses aluminum foil for barrier to protect the food and medical supplies that go into our packaging. Without aluminum foil many food and medical products would be less safe and subject to higher waste through distribution. While Bemis sources a large percentage of its aluminum in the United States, there is only one domestic producer of converter foil, and that firm's entire capacity is not enough to supply Bemis' annual requirements. In addition, a large portion of Bemis' foil requirements are for ultra thin foil of gauges less than 0.0003 inches thick. Such ultra thin foil is used for applications like ketchup packets, cream cheese packaging, powdered food and beverages, and medical device packages. Bemis' customers such as Kraft/Heinz, McCormick, and Becton Dickinson require this thin converter foil, but U.S. foil producers do not want, or are unable, to make gauges under 0.0003 inches. As such, Bemis has been required to source this key material from offshore suppliers.

Measures to restrict imports could negatively impact the U.S. economy and employment

Bemis operates in a highly competitive domestic and international market. Many of Bemis' aluminum foil containing products compete with suppliers of packaging from outside the U.S. Increased prices or quotas for aluminum foil will open the door for imports of finished packaging resulting in a loss of market share, profitability and ultimately employment.

We are not aware of any significant defense production needs for aluminum packaging foil. The only military application we have identified for aluminum packaging foil is for Meals Read to Eat ("MREs"). However, MRE's are typically made with a thicker foil than Bemis uses which can be easily sourced domestically.

Finally, we understand the importance of protecting domestic manufacturers in key industries. To the extent that the Secretary and the Department are concerned about distortions in the aluminum foil market, we note that the ongoing trade remedy proceedings before the Department of Commerce and the U.S. International Trade Commission provide an appropriate tool to address any needed corrections. Those proceedings, entailing thorough factual and market research and analysis, are at a preliminary stage. The present Section 232 investigation should not be used to restrict imports of aluminum foil for commercial uses as the result would be grave economic consequences to the domestic manufacturing facilities of Bemis, other packaging producers, and our customers with no increase in defense security.

Thank you, I would be happy to answer questions.

WRITTEN TESTIMONY by Jorge Vazquez

before the US Commerce Department on US national security and aluminum imports,
at the public hearing scheduled to be held on June 22, 2017, in Washington, DC.

1. **My name is Jorge Vazquez**, Founder, Managing Director and Chief Intelligence Officer of *HARBOR Aluminum Intelligence LLC*.

2. **HARBOR is an independent, privately-owned research firm based in Austin, Texas, that specializes in the analysis of the global aluminum industry** and its various sub markets. We compile, develop, and analyze aluminum industry data and market intelligence for more than 300 companies across the globe and throughout the aluminum supply chain.

3. **Every year, HARBOR's integrity and specialized knowledge brings the aluminum market together for the *HARBOR's Aluminum Outlook Summit*, the world's largest aluminum industry conference with over 515 delegates from 250 companies around the world.** A third of the delegates that attend this Summit are from upstream industries (smelting, alumina, bauxite and carbon products), another third from downstream industries (aluminum mill products and castings, aluminum manufacturers, end-users) and a final third from service companies (banks, traders, brokers, analysts, consultants, warehousing, logistics companies, government agencies, law firms).

4. **My testimony is factual.**

5. **Over 98% of the 9.2 million mton of aluminum products the US consumed in 2016 were produced in the United States.** By aluminum products I mean mill products (flat rolled products, extrusions, wires & cables, powder, forgings) and castings.

6. **Net US imports of aluminum products have declined in the last ten years (not increased), both in absolute and relative terms**. From 250k mton in 2006 (2.5% of US consumption) to 147k mton in 2016 (1.6% of US consumption). Ten years ago, the US was a net importer of aluminum foil, sheet, plate, and extrusions. Today, it is a net exporter of cansheet (over 220k mton) and other sheet and plate products, has a balanced position in extrusions, and is only a net importer of foil.

7. **Moreover, US net aluminum products trade balance with Canada and Mexico has improved noticeably in the last ten years.** Net exports of aluminum products to NAFTA partners have more than tripled, from 227k mton in 2006, to 690k mton in 2016. In turn, the US has increased its net imports of feedstock (primary aluminum and scrap) from its NAFTA partners from 2.0 to 2.3 million mton.

8. **In fact, the US is a net exporter of cansheet to the world.** Over 98% of the cansheet the US annually consumes is produced domestically. While the US imports only 50k mton of cansheet, it exports 279k mton mainly to Mexico and Canada.

9. **Contrary to what many may imagine, the US has an aluminum trade surplus with China. However, this trade surplus has deteriorated in the last ten years.** In 2006, the US had a net aluminum trade surplus of 660k mton with China (net exports of 895k mton of scrap vs net imports of 135k mton of extrusions and foil). Today, the US has a smaller net export position of 169k mton (next exports of 690k mton of scrap vs net imports of 500k mton of foil, sheet & plate).

10. US military demand for aluminum products (mill products and castings) is more than 99% sourced from US producers. In fact, US production of aluminum products is about 45 times larger than US military aluminum demand volumes. All of the aluminum aerospace plate used by the US military is produced in US aluminum rolling mills. HARBOR estimates that these mills could increase military aluminum aerospace plate production by a factor of 4x if needed by increasing capacity utilization or moving away from commercial aerospace plate production.

11. US production of high purity aluminum (P0406 and P0202) is estimated by HARBOR to be 117k mton per year, essentially three times larger than what the US military consumes every year (42k mton). Moreover, existing US high purity aluminum inventories, held mainly by one player, can cover almost 2 years of US military high purity consumption.

12. What if US production of high purity aluminum ceases to exist? Well, the US military could alone produce its entire high purity aluminum needs using fractional crystallization technology (with an investment of around $25 million and at an operating cost we estimate to be only 2% higher than current market prices for high purity aluminum). This technology is readily available in the US and currently operates at commercial levels.

13. US primary aluminum production has been in decline since 1980 (when production peaked at 4.66 million mton). This decline started several decades before the Middle East and China became relevant primary aluminum producers.

14. Has China overproduced primary aluminum and caused US smelters to close? Consider four things:

a) US smelting production had already decline 40% (from 1980 to 2001) by the time China's primary production and consumption started to take off in 2002,

b) Average cash profit margins for smelters outside China (US included) have been higher (28% vs 25%) in the last 12 years (2002-2016) than in the previous 12 years, prior to when China's primary aluminum production and consumption took off (1990-2001),

c) China's total primary aluminum stocks today equate to approximately 4 weeks of consumption vs 30 weeks of consumption outside China (in the rest of the world) and,

d) China does not export primary aluminum (having a 15% export tax on all primary aluminum exports).

15. The US, just as other developed economies like Japan and Germany, has experienced an organic long term decline in primary aluminum production as result of:

a) an exponential increase in domestic aluminum scrap availability (requires 20 times less energy to process than primary aluminum),

b) high electricity prices relative to other developing countries,

c) lack of investment in smelting assets (smelters old) and,

d) a long-term decline in aluminum consumption per capita (urbanization and industrialization peak reached several decades ago).

16. **Moreover, the decline in US primary aluminum production in the last 5 years has been particularly driven by a strong rally in the US dollar, which appreciated around 20% over this period.** This appreciation has pushed US smelters, already the world's oldest (44 years old on average), and least energy efficient (14.6 MW/hr per mton of primary aluminum produced) to become the most expensive producers in the Western World.

17. **It is conclusive and technically clear to me that growing US primary aluminum imports have been a natural economic effect of the gradual long term decline in un-competitive US primary aluminum production. Not vice-versa.** Imports of primary aluminum have stepped in to fill the gap that a decline in un-competitive domestic primary production has created since 1980. Net imports have increased from around zero in 1990 to over 4 million mton in 2016.

18. **Net US primary aluminum imports represent 43% of the feedstock the US needs to produce aluminum products. This is in line with other developed economies** like Germany (44% of feedstock is imported primary aluminum), UK (44%), and Japan (58%) which use domestic scrap as their primary feedstock (between 43-48% of total feedstock used).

19. **No primary aluminum is imported into the US from China.** Around 54% of US primary aluminum imports come from Canada, 19% from the Middle East, 16% from Russia and 6% from Latin America.

20. **Again, declining US primary aluminum production is part of an organic and long-term economic maturity process** where the US economy and aluminum industry (like other developed countries such as Germany, Japan and the UK) have moved away from low-value, energy-intensive, and less competitive industrial segments to more profitable and energy efficient economic sectors (value-added aluminum and manufacturing products, services, hi-tech).

21. **Japan and Germany are useful and comparable examples of this maturing process that allows them to be more energy efficient and produce value add products.** Since 1987, Japan has been importing basically all its primary aluminum needs but has become a net exporter (150k mton) of value add aluminum products (foil, sheet and plate, and even extrusions). Germany's primary aluminum production has been declining since 1984 and produces today less primary aluminum than the US (546k mton vs 818 kmton). However, Germany is a significant net exporter (450 k mton) of value added aluminum products (foil, sheet and plate).

22. **It is my technical view that any artificial increase in US smelting competitiveness via limitation or taxing of primary aluminum imports, will negatively impact the competitiveness of the US downstream aluminum industry** which today is 11 times larger than the US smelting industry in mton produced and about 50 times larger in direct jobs generated (3,000 smelting jobs vs 150,000 downstream industry jobs).

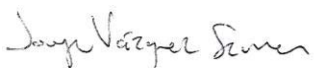
23. **Indeed, exports of value add US aluminum products like cansheet, extrusions and foil to Mexico and Canada would decline in a significant way if the US were to impose any type of restriction and/or duty on primary aluminum** that translates into any US primary aluminum price inflation.

24. Unlike steel, aluminum is a global commodity. It's price is determined by the forces of physical and financial demand and supply that interact each day in the London Metal Exchange.

25. However, my analysis of prices and physical transactions in the US aluminum market is leading me to believe that an artificial/inorganic increase in the Midwest Premium (regional price) may have attracted more primary aluminum imports than otherwise may have occurred. I can provide this analysis upon request.

26. What does the aluminum industry thinks about a potential restriction and/or duties on US imports of primary aluminum? In a live poll conducted during HARBOR's 10th Aluminum Outlook Summit on June 7, 2017 (518 industry delegates, 78% were either CEO's, Managing Directors or Vice Presidents, 30% upstream, 30% downstream and 30% services): 98% of respondents believed no duties should be imposed at all on US imports of primary aluminum. Moreover, 78% of respondents believed that US aluminum imports pose no threat to US National Security. I can provide these live poll results upon request.

Sincerely,



Jorge Vazquez

Founder and Managing Director

HARBOR Aluminum Intelligence

Prepared Remarks of Charles Koetting
Owner of C-KOE Metals, L.P – Euless, Texas

Presented to

232 Investigation on Aluminum Imports
Department of Commerce
22 June 2017

My name is Charles Koetting. I am the owner of C-KOE Metals, L.P. located in Fort Worth, Texas. C-KOE manufactures aluminum pellet that is used by major chemical companies and is used to alloy metals. An average of 71% of our production is sold domestically, 9% sold into China, and 20% into other foreign countries.

1. Cost of aluminum production in the United States is higher than anywhere in the world[1]. This is due primarily to the cost of energy[1], which is 38% of the total cost of aluminum[2]. Aluminum can be produced in Canada for approximately 12 cents/pound less than in the United States[1]. Other countries have similar advantages over us.

   In the year 2000, there were 21 operating smelters in the U.S. Today there are only two companies in the U.S. operating a total of 5 smelters; only 2 of which are at capacity. The average age of theses smelters is 44 years versus less than 10 years for those in Asia and the Middle East.[1] The U.S. smelters are operating with a distinct disadvantage because of their old technology and the higher cost of electricity.

2. The U.S. has a large downstream aluminum industry which is at least ten times larger than the smelting industry and which creates a vastly greater number of jobs. It will become less competitive and lose potentially many more jobs with the higher costs imposed by any tariff.

3. C-KOE produces aluminum products in purity grades from P1020 to 99.998% pure. Currently, U.S. producers can only produce purity as high as P0101. We sell much higher purity products to the titanium and defense industries. In fact, C-KOE is the only approved supplier of high-purity aluminum used in the domestic manufacture of titanium alloys used in aerospace and military applications. We import high-purity aluminum from over 10 suppliers across the globe. A tariff will affect the prices of material that cannot even be produced in the United States.

4. The cost for aluminum in supplier and customer contracts written in the U.S. is based on the London Metal Exchange and the Midwest Transaction indexes. Costs move up and down with the market. There has never been a tariff on primary aluminum in the U.S. and therefore, contracts do not anticipate nor consider tariffs. If a tariff is passed, it will cause havoc in the market.

   For instance, at C-KOE, we buy and sell on the same market. Our contracts with our suppliers and customers allow for the price of aluminum to go up and down based on the indexes. This allows us to sign contracts as long as 4 years, since the rise and fall of aluminum price is covered. We then add a fixed cost per pound to convert the aluminum to pellets. This conversion cost covers our direct costs as well as overhead and profit. If a tariff is imposed, C-KOE would have to pay it, with no way to recoup it. We would soon be bankrupt. Margins are small in this industry and tariffs could cause the failure of many companies, such as C-KOE.

5. In 2015, the U.S. Military only used 42,000 Metric Tons of high purity aluminum. The U.S. production capacity was 192,000 Metric Tons, of which 75,000 Metric Tons were idle. In addition, there were 75,000 Metric Tons in U.S. domestic inventory[1]. This equates to 4.6 times the production capacity with 1.8 times the inventory of military usage.

In conclusion: Why on earth do we need a tariff on high purity aluminum:

- To protect two companies currently operating in the U.S., who have chosen to stay with outdated technology in a country with extremely high energy costs?
- Who already have 4.6 times as much capacity as the military needs when we have 1.8 years of inventory.
- When any tariff would create havoc in the downstream market, cause downstream producers to be less competitive, cause bankruptcies and cause a higher loss of jobs than any tariff purports to protect.
- Why do we want to protect all of this when these aluminum purities are available in many countries throughout the world?
- Is our military, all at once, going to go to war with every country in the world that has aluminum producers? Will we no longer have allies, such as Canada, the source of 63% of U.S. imports between 2010-2013[3].

I am strongly opposed to actions and steps taken to adjust aluminum imports because they are totally unnecessary.

References:

(1) 10th Annual Harbor Aluminum Summit, June 2017, Chicago, IL. Harbor Aluminum Intelligence LLC is an independent, privately owned research firm based in Austin, Texas, that specializes in the global aluminum industry and its various sub markets. HARBOR complies develops and analyzes aluminum industry data and market intelligence for more than 300 companies across the aluminum supply chain and around the globe.
(2) Aluminum Insider, April 2016
(3) USGS Survey, January 2015

Submitted by:

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ABOUT CHARLES KOETTING

Charles Koetting is a successful entrepreneur who began his career as an industrial general contractor. His educational background in economics, along with his keen business sense, allowed him to realize the potential of a small aluminum recycling facility. Through his vision, C-KOE Metals has become a predominant source of high purity aluminum for users around the world. Charles is the driving force behind the long-term business relationships, recruiting and retaining highly qualified staff and the steady financial growth. In addition to C-KOE Metals, Charles has founded more than 40 other successful enterprises in property development, construction, and manufacturing industries.

ALUMINUM EXTRUDERS COUNCIL

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SECTION 232 ALUMINUM INVESTIGATION
AEC PRESENTATION

- GOOD MORNING
- I AM JEFF HENDERON, PRESDIENT OF THE ALUMINUM EXTRUDERS COUNCIL, THE 'AEC"
- THE AEC HAS OVER 100 U.S. MEMBERS WHO ARE MANUFACTURERS OF ALUMINUM EXTRUSIONS
- OUR MEMBERS, AND THEIR SUPPLIERS, EMPLOY OVER 35,000 WORKERS DIRECTLY, AND NEARLY 100,000 INDIRECTLY, IN HUNDREDS OF PLANTS SPREAD OVER 35 STATES
- WE APPLAUD THE ADMINISTATION'S INITIATION OF THIS INVESTIGATION – AS IT RECOGNIZES THE EXTEREME IMPORTANCE OF THE US ALUMINUM INDUSTRY AND ITS WORKERS TO THE NATIONAL SECURITY OF THE UNITED STATES
- IN THIS INVESTIGATION, "ALUMINUM" SHOULD BE DEFINED BROADLY TO INCLUDE BOTH PRIMARY ALUMINUM AND SEMI-FABRICATED ALUMINUM ITEMS
- INDEED, ALUMINUM IS PRODUCED ON A PRODUCTION CONTINUUM.
- AT ONE END ARE PRODUCERS OF PRIMARY OR "UNWROUGHT" ALUMINUM, MAINLY IN THE FORM OF INGOT.
- PRIMARY ALUMINUM IS INTENDED ALMOST EXCLUSIVELY FOR FURTHER PROCESSING INTO A SEMI-FABRICATED FORM, SUCH AS, SHEET, COIL, FOIL, PLATE AND EXTRUSIONS, ALL OF WHICH FALL ON THE OTHER END OF THE ALUMINUM CONTINUUM.

- THE THRESHOLD QUESTION IN THIS INVESTIGATION IS WHETHER ALUMINUM IS “ESSENTIAL” TO U.S. NATIONAL SECURITY

- THE ANSWER IS “YES”

- NUMEROUS FINISHED PRODUCTS MADE WITH ALUMINUM ARE CRITICAL TO THE U.S. DEFENSE INDUSTRIAL BASE – WHICH WE WILL ADDRESS IN DETAIL IN OUR WRITTEN SUBMISSION

- INDEED, NOT ONLY IS A THRIVING ALUMINUM INDUSTRY CRUCIAL TO OUR NATION’S NATIONAL SECURITY, CERTAIN FOREIGN INDUSTRIAL POLICIES POSE A SIGNIFICANT THREAT TO THE U.S. ALUMINUM INDUSTRY

- THIS IS PARTICULARLY THE CASE WITH CHINA, AND MORE RECENTLY MALAYSIA AND VIETNAM

- WHILE ALUMINUM’S DEFENSE APPLICATIONS ARE EXTREMELY IMPORTANT, PROTECTING THAT SEGMENT OF THE MARKET ALONE IS NOT SUFFICIENT, ON ITS OWN, TO ENSURE THE CONTINUATION OF A VIABLE U.S. ALUMINUM INDUSTRY.

- RATHER, THE **ENTIRE** U.S. ALUMINUM PRODUCTION CONTINUUM MUST BE PROTECTED

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- SO, WHAT IS REQUIRED TO PROTECT THE U.S. ALUMINUM INDUSTRY?

- WELL, FIRST YOU MUST UNDERSTAND THE ALUMINUM CRISIS

- THE CRISIS CONFRONTING THE U.S. ALUMINUM INDUSTRY IS CHINA, PLAIN AND SIMPLE

- AS WITH OTHER CRITICAL INDUSTRIAL SECTORS, CHINA’S ALUMINUM STRATEGY IS TO CONTINUE TO BUILD PRODUCTION CAPACITY AND EMPLOY TENS OF THOUSANDS OF EXCESS WORKERS BY ARTIFICIALLY INCREASING ALUMINUM OUTPUT

- CHINA USES MASSIVE SUBSIDIES AND OTHER PROTECTIONIST AND ENVIRONMENTALLY-DESTRUCTIVE POLICIES TO ACCOMPLISH THESE MARKET-DISTORTING OBJECTIVES

- UNLESS PRESIDENT TRUMP AND THIS ADMINISTRATION TAKE DECISIVE, CORRECTIVE ACTION, THE U.S. ALUMINUM INDUSTRY’S ABILITY TO

CONTINUE PRODUCING DEFENSE AND OTHER CRITICAL INFRASTRUCTURE ITEMS MAY BE SET BACK PERMANENTLY OR DESTROYED

- THE U.S. ALUMINUM INDUSTRY HAS PAID THE PRICE FOR CHINA'S SELF-INTERESTED POLICIES, AS HAS OUR NATIONAL SECURIT

- 7 YEARS AGO, THE AEC LED THE CHARGE IN BRINGING ANTIDUMPING & COUNTERVAILING DUTY CASES AGAINST CHINESE ALUMINUM EXTRUSIONS

- SINCE IMPOSITION OF THE ORDERS, THE CHINESE HAVE WORKED OVERTIME DEVISING MULTIPLE TRANSSHIPMENT AND OTHER EVASION SCHEMES TO AVOID THE DUTIES

- SIMILARLY, THE CHINESE ARE DEVEOPING PRODUCTION IN THIRD-COUNTRIES, INCLUDING MALAYSIA AND VIETNAM.

- FOR EXAMPLE, IN VIETNAM, TO AVOID CHINA'S EXPORT TAX ON PRIMARY ALUMINUM, THE PRODUCTS ARE FABRICATED INTO EXTRUSIONS AND EXPORTED TO CHINESE-OWNED FACILITIES IN VIETNAM, WHERE IT IS REMELTED AND EXTRUDED AGAIN FOR EXPORT TO THE UNITED STATES IN VIOLATION OF OUR ORDERS.

- CHINA'S PRACTICES HAVE HAD A DEVASTATING IMPACT ON THE U.S. ALUMINUM INDUSTRY, AS THEY HAVE FUNDAMENTALLY DISTORTED THE US MARKET

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- LET ME HIGHLIGHT HOW THE AEC BELIEVES THAT THE ADMINISTRATION SHOULD ADDRESS THE ALUMINUM CRISIS

- KEY TO OUR RECOMMENDATIONS IS THAT THE ADMINISTRATION MUST ENSURE THAT ITS ACTIONS DO NOT REINFORCE OR EXACERBATE THE EXSITING DISTORTIVE CHINESE POLICIES.

- AS SUCH, THE AEC DOES <u>NOT</u> SUPPORT THE IMPOSITION OF TARIFFS OR OTHER RESTRICTIONS ON IMPORTS OF PRIMARY ALUMINUM, AS THAT WILL SIMPLY REINFORCE CHINA'S ALUMINUM POLICY GOALS – ESPECIALLY SINCE CHINA DOES NOT EXPORT PRIMARY ALUMINUM!

- IMPOSING TARIFFS ON PRIMARY ALUMINUM WOULD ADVERSELY IMPACT THE ABILITY OF U.S. SEMI-FABRICATED PRODUCERS, INCLUDING AEC'S MEMBERS AND CUSTOMERS, TO COMPETE AGAINST IMPORTS OF THEIR PRODUCTS FROM OTHER COUNTRIES.

- THE ADMINISTRATION SHOULD INSTEAD SEEK TO RESTORE THE ECONOMIC VIABILITY OF THE U.S. ALUMINUM PRIMARY INDUSTRY **AS A WHOLE** BY ADDRESSING THE UNDERLYING REGULATORY ENVIRONMENT THAT HAS MADE THE PRIMARY INDUSTRY INCREASINGLY LESS COMPETITIVE

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- TO THE EXTENT THE ADMINISTRATION DETERMINES THAT TARIFFS /OR OTHER RESTRICTIONS ON IMPORTS OF PRIMARY ALUMINUM ARE NECESSARY, IT SHOULD ENSURE THAT U.S. PRODUCERS OF SEMI-FABRICATED PRODUCTS, INCLUDING EXTRUSIONS, ARE NOT NEGATIVELY IMPACTED

- REGARDING EXTRUSIONS, THE ADMINISTRATION SHOULD IMPOSE DUTIES ON ALUMINUM EXTRUSIONS FROM COUNTRIES THAT ARE ALLOWING CHINA TO EVADE OUR ORDERS

- THANK YOU

* * *

Aluminum is the most abundant naturally occurring metal in the Earth's crust, and it is an essential element of modern life. Virtually every person in the United States, and indeed most of the world, uses aluminum every single day. More aluminum is consumed today than at any point in the 125-year history of the metal's commercial production. Lightweight, corrosion resistant, easily formed, highly conductive, highly reflective, durable and recyclable—aluminum is a highly useful material for manufacturers. It offers a wide range of options for product innovation and process improvements. Aluminum is critical to modern mobility, increasing sustainability, and the national economy.

Aluminum is used in a wide variety of applications, and global demand for it is expected to grow at an annual rate of 3.8 percent.[1] Transportation applications, including aircraft and automobiles, account for 41 percent of domestic consumption, followed by packaging with 20 percent, building construction with 15 percent, electrical with eight percent, and machinery with seven percent.[2] One of the factors driving increasing demand for aluminum is its ability to reduce weight, thereby improving energy efficiency.

Aluminum originates from bauxite, an ore typically found in the topsoil of various tropical and subtropical regions; the United States is not a significant source of bauxite as it cannot be economically extracted here. Once mined, aluminum within the bauxite ore is chemically extracted in a refinery into alumina, an aluminum oxide compound. In a second step, the alumina is smelted to produce pure aluminum metal. (*See* Figure C-1).

The domestic aluminum industry directly employs nearly 161,000 workers and generates $75 billion a year in direct economic output.[3] For each aluminum industry job, an additional 3.4 employment positions are created elsewhere in the economy. In total, 713,000 U.S. jobs are supported by the production, processing and use of aluminum. When all suppliers and related business functions are taken into account, the industry drives $186 billion in economic output—more than one percent of GDP.[4]

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[1] The Aluminum Association

[2] U.S. Geological Survey, Mineral Commodity Series, January 2017

[3] The Aluminum Association

[4] The Aluminum Association

The aluminum industry can be divided into three basic segments: upstream, downstream, and secondary. The **upstream sector** includes primary or "unwrought" aluminum production, in which aluminum is produced from raw materials. It includes companies engaged in bauxite mining. After extraction, the bauxite is sent to a refinery, where it is processed into alumina (aluminum oxide). The alumina is then sent to a smelter, where it is transformed into primary aluminum. Primary aluminum is mainly produced in the form of ingots and billets, and is the starting block for the production of aluminum products. Major U.S. players in the primary aluminum industry include Alcoa, Inc. and Century Aluminum.

Primary aluminum production is highly electricity intensive; electricity can account for up to 40 percent of the costs of production. For this reason, primary aluminum production facilities are often located near sources of lower cost energy, such as hydroelectric power. Although incremental technological progress has been made over the past several decades, electric power costs remain a critical issue for this industry. Aluminum smelters in the U.S. have incurred hikes in electricity costs as long-term lower-cost supply contracts with power suppliers have expired. Efforts to find low-cost revolutionary primary metal production technology have been ongoing for half a century, but a breakthrough has yet to be achieved.

The majority of U.S. aluminum production today is based on recycled scrap, called **secondary production**. The United States is the world's leading producer of secondary unwrought aluminum, due to its long established aluminum recycling industry. The secondary production process begins with extracting used aluminum from waste streams (from both the manufacturing process and from post-consumer sources) and getting it ready for recycling.

Once the scrap is collected and sorted, it is melted in a furnace and turned into molten aluminum. This molten aluminum may be kept in its liquid state, or cast into large slabs called ingots or billets. In some cases, alloying elements are added to the liquid aluminum in order to produce the desired metal for a specific product type. Aluminum ingots may be rolled back into a sheet product (like can or auto body sheet) while billets can be extruded into a shaped product. By reprocessing scrap aluminum, secondary production uses only 10 percent of the electricity required for primary aluminum smelting. This energy efficiency has been the driving force for the rise of the secondary production sector over the past the three decades.

[5] Aluminum: The Element of Sustainability; The Aluminum Association, September 2011 and USGS Mineral Commodity Series.

Two main manufacturing techniques used to make downstream aluminum products are *casting* and *forging*. Casting is a way of forming aluminum into intricate shapes. The automotive industry is the largest market for cast aluminum, which is often used in transmission housings, engine parts, mounts, and suspension parts. Aluminum cookware is another cast product in everyday use.

Forging, in which aluminum billets are pressed or squeezed under pressure, is used to produce high-strength parts used in aerospace and automotive applications including pistons, gears, and wheels.

Figure C-1.

Source: The Aluminum Association

At the request of the U.S. House of Representatives Committee on Ways and Means, the U.S. International Trade Commission (USITC) launched an investigation on April 6, 2016 to examine the U.S. aluminum industry and global aluminum trade. The USITC investigation examined industry characteristics, factors related to increased capacity, competitive strengths and weaknesses, recent trade trends, and the effect of government policies on production and trade of aluminum. The USITC also assessed the impact of foreign government policies in select countries on their domestic production, consumption, exports, and prices of aluminum. USITC's report was made public in June 2017.

In January 2017, the United States delegation launched a World Trade Organization (WTO) trade enforcement complaint concerning China's subsidies to certain producers of primary aluminum. The United States alleges that the Chinese Government has provided low-cost financing and inputs to its primary aluminum producers, which displaced and impeded U.S. imports of primary aluminum into China and the global market, suppressed global prices, and increased China's global market share.[1] The complaint contends that Chinese subsidies appear to have caused serious prejudice under WTO rules to U.S. interests. The USTR requested consultations with China at the WTO regarding China's subsidies to its primary aluminum producers since 2007, but to no avail.

In April 2017, the USITC determined in an antidumping investigation that there is a reasonable indication that imports of aluminum foil from China are subsidized and sold in the United States at less than fair value. Because of the ruling, the U.S. Department of Commerce continued to conduct its portion of the antidumping and countervailing duty investigations to determine if the U.S. industry had been injured by these unfairly traded imports.

The investigations were started in March 2017 at the request of the Aluminum Association Trade Enforcement Working Group and are the first trade action ever initiated by the Association. The U.S. Department of Commerce announced its preliminary determination on August 8, 2017. The investigation determined that exporters of foil from China received subsidies ranging from 16.56 percent to 80.97 percent. The final determination is scheduled to be announced early in 2018.

Twelve years ago, U.S. production accounted for about 84 percent of all domestic aluminum foil consumption. Today that has dropped to 69 percent. During the

[1] https://www.uscc.gov/sites/default/files/trade_bulletins/May%202017%20Trade%20Bulletin.pdf

same time, Chinese imports grew from essentially zero percent of the total U.S. aluminum foil market in 2004 to 22 percent of the market in 2017.[2]

The aluminum foil investigation follows actions taken on aluminum extrusions from China. In June 2015 the U.S. Department of Commerce established dumping margins of 32.79 percent ad valorum for aluminum extrusions shipped by 39 companies. However, due to the limited scope of these antidumping and countervailing duty investigations, any remedies will not be applicable to the broader aluminum industry. WTO rules require cases to be very specific as to product and origin; they therefore are easily avoidable by means of transshipment.

On May 26, 2011, the U.S. Department of Commerce issued CVD and AD orders on imports of certain aluminum extrusions from China. Commerce issued the orders after determining that imports of this product are subsidized and are being sold in the United States at less than fair value, and the USITC determined that a U.S. industry is materially injured by such imports. In 2016, Commerce and USITC initiated five-year "sunset" reviews of these orders. Both agencies determined that there was a need to continue these orders, and on April 17, 2017 Commerce published a notice continuing them.

[2] Aluminum Association

There is widely acknowledged massive overcapacity and oversupply in the world aluminum market, as a direct result of the dramatic increase in aluminum production, primarily in China, over the past 15 years. This oversupply has had a devastating effect on the worldwide aluminum industry. As a result, a number of countries, including the United Kingdom, Japan, and the European Union members banded together with the United States through the WTO in December 2017 to confront China over its excess industrial capacity.

The situation was described in detail in hearings held by the International Trade Commission as part of their ongoing investigation and in written submissions provided to the USITC.[1] Many of the organizations that testified, including Century Aluminum (Kentucky), various members of the downstream aluminum industry in the United States, and Canadian, European and Russian producers, stated that the world's primary aluminum producers are effectively being decimated by Chinese overcapacity (*See* figure D-1), and by the unfair practices of Chinese aluminum producers. The pressure on the U.S. and the global aluminum industry posed by Chinese excess production is also highlighted in the U.S.-China Economic and Security Review Commission's 2016 Annual Report to Congress.[2]

The public comments received as part of this investigation and testimonies given during the public hearing held on June 22, 2017 were nearly unanimous in describing the devastating impact that Chinese overcapacity and unfair trade practices have had on the domestic aluminum industry, both upstream and downstream sectors. (*See* Appendix A.)

In 2000, China produced about 11 percent of the world's primary aluminum; in 2017, it produced more than 50 percent.[3] It is by far the world's largest producer of aluminum, as well as the world's largest consumer of aluminum. China's massive investments in infrastructure and its role as the world's largest assembler of electronic equipment (which has substantial aluminum content) accounts for its increase in domestic aluminum consumption. The Chinese aluminum industry, with the strong support of its government, has expanded far beyond its domestic needs, and is unresponsive to market signals. It defies manufacturing economics.

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[1] Public transcripts available through https://edis.usitc.gov/edis3-external/external.svc

[2] U.S.-China Economic and Security Commission "Sector Spotlight: U.S. Aluminum Sector Under Pressure from China." USCC Annual Report to Congress, 2016

[3] Aluminum Association

[4] World Aluminum Institute

[5] Cited in U.S.-China Economic and Security Commission "Sector Spotlight: U.S. Aluminum Sector Under Pressure from China." USCC Annual Report to Congress, 2016.

[6] Bloomberg. China's Aluminum Glut May Worsen as Capacity Growth Sustained.

Figure D-1 – Global Primary Aluminum Production

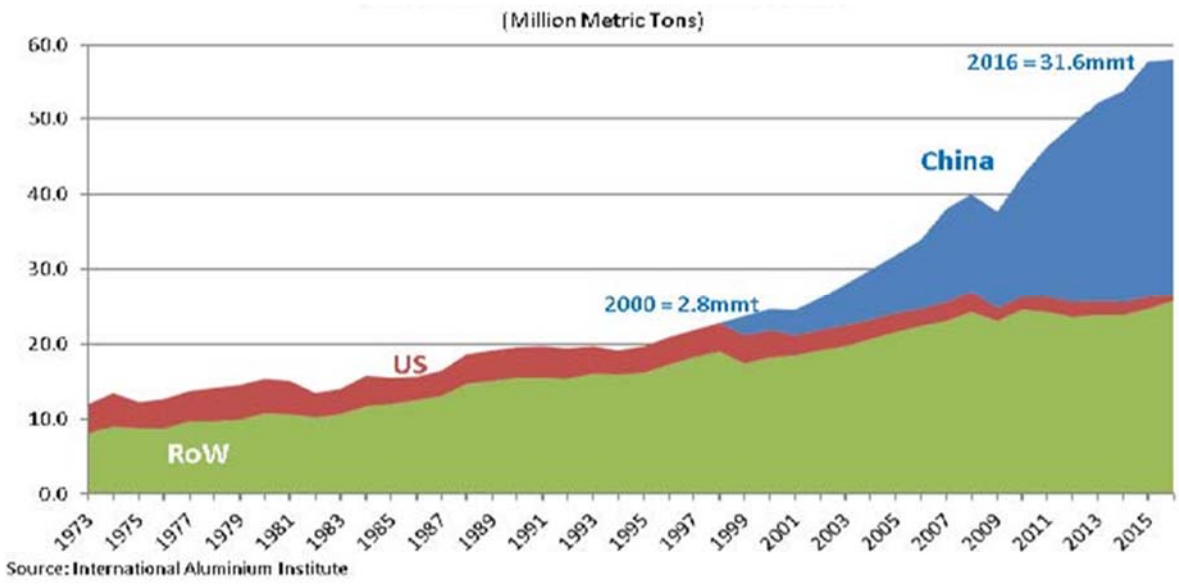
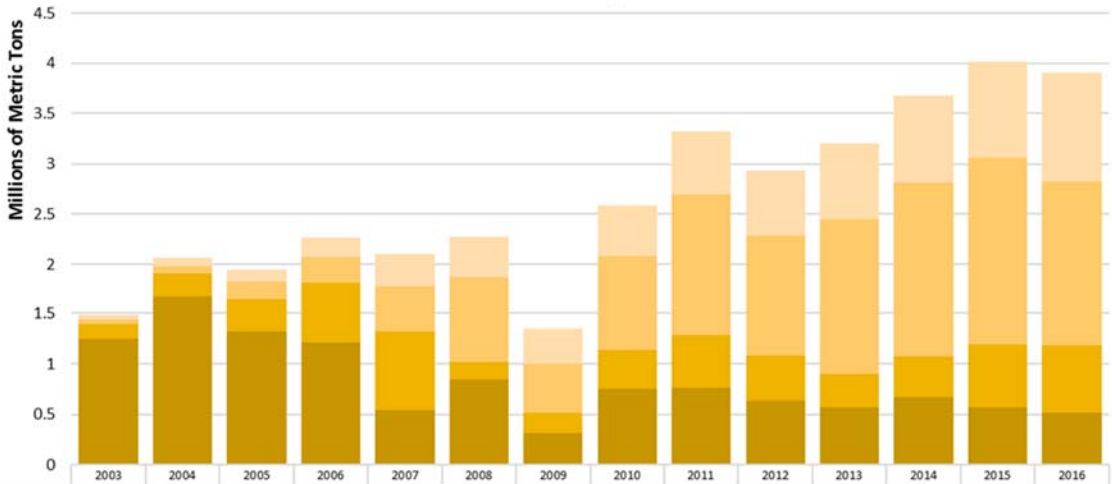


Figure D-2 – Global and Chinese Primary Aluminum Production and Capacity 2012-2016 (Millions of Metric Tons)					
PRODUCTION	**2012**	**2013**	**2014**	**2015**	**2016**
China	20.3	22.1	24.4	31.4	31.0
Rest of World	25.6	25.5	26.1	26.1	26.6
Total	**45.9**	**47.6**	**50.5**	**57.5**	**57.6**
China as a % Total	44.2%	46.4%	48.3%	54.6%	53.8%
CAPACITY	**2012**	**2013**	**2014**	**2015**	**2016**
China	26.9	32.0	35.0	38.6	40.1
Rest of World	30.1	30.9	31.9	32.6	32.4
TOTAL	**57.0**	**62.9**	**66.9**	**71.2**	**72.5**
China as % of Total	47.2%	50.9%	52.3%	54.2%	55.3%
Source: U.S. Geological Survey, Mineral Commodity Summaries 2013-2016					

China's excess aluminum production is flooding global markets in the form of exports, which totaled 3.9 million metric tons in 2016. This figure is over four times U.S. production.

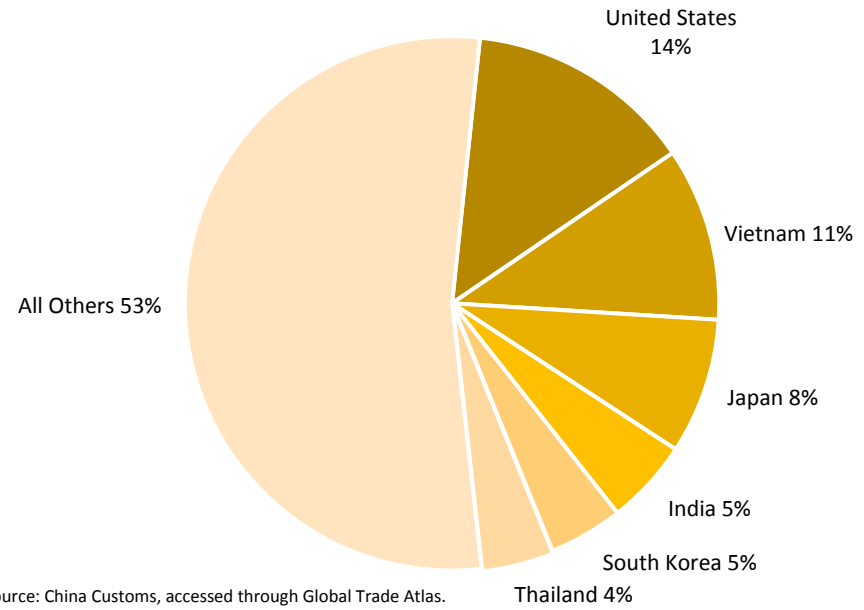
Figure D-3 – China's Aluminum Exports



	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Foil	46,008	74,937	120,803	186,359	325,411	402,762	348,658	499,282	622,733	652,812	754,663	867,634	952,307	1,080,136
Plates, Sheets, and Strip	52,073	80,858	169,573	261,587	459,569	860,309	482,473	949,448	1,415,236	1,194,146	1,553,260	1,738,417	1,870,960	1,639,912
Bars, Rods, and Profiles	140,913	224,120	328,456	602,143	771,769	173,422	207,153	379,922	518,419	454,726	323,810	407,540	625,096	674,219
Unwrought	1,250,078	1,679,439	1,324,361	1,212,828	545,906	841,292	310,095	754,465	766,142	631,262	572,317	667,051	565,639	511,719

Source: China Customs, accessed through Global Trade Atlas.

Figure D-4 – China's Aluminum Exports by Partner Country, 2016



Source: China Customs, accessed through Global Trade Atlas.
Total export quantity: 3.9 million metric tons.

The impact that Chinese overproduction has had on the U.S. aluminum industry is twofold. Chinese overcapacity has suppressed global aluminum prices. As a global commodity traded on metal exchanges such as the London Metals Exchange (LME), prices are primarily driven by global supply and demand, regardless of where the aluminum is produced. Thus, the impact of Chinese overcapacity has been transferred to the U.S. aluminum market. The LME market price for aluminum fell 39 percent between 2007 and 2016.

The most direct and dramatic effect has been on U.S. primary aluminum producers (smelters). Eight U.S. smelters have either closed or curtailed production since 2014, leaving only two fully operational at 100 percent capacity; in contrast, China has 180 operational smelters. The decline in U.S. production has occurred despite growing demand for aluminum both in the U.S. and abroad. With the flood of excess Chinese aluminum, the price of aluminum in world markets plummeted in recent years to levels at which U.S. smelters could not continue to operate profitably. In an industry with high fixed costs, many domestic producers have not survived the prolonged period of low prices.

Despite promises by the Chinese Government to curtail capacity, there has been little voluntary shutdown of production. In fact, some plants that had closed in 2015 have been restarted. Primary output by Chinese smelters for the first 5 months of 2017 was up nearly 9 percent from 2016 levels. And while the Chinese Ministry of Industry and Information Technology (MIIT) has approved 30 million tons of smelting capacity, the country's total capacity is estimated to be 43 million tons, suggesting that there is 13 million tons of illegal capacity.[7]

The overcapacity situation has had an impact, beyond smelters, on the entire continuum of aluminum production. Chinese industrial policy is designed to capture control of the entire value chain from primary aluminum through downstream products. Chinese policy discourages export of primary aluminum through a 15 percent export tax; Chinese downstream aluminum producers are able to obtain primary aluminum at a price advantage on the Shanghai Futures Exchange, which regularly has price advantage compared to the LME. Moreover, Chinese downstream aluminum producers are able to profit from at VAT rebate on their exports of between 13-17 percent. Thus, the excess Chinese aluminum production is not being exported in the form of unwrought aluminum; rather, it is being processed into sheet, plate, foil and other semi-manufactures, which are then

[7] Bloomberg Intelligence, "Political Curtailment Alone Can't Alleviate China Overcapacity," June 25, 2017.

being exported to the United States (and elsewhere) at record levels (see Figure D-3). Furthermore, China's interest and skill in value-added aluminum products is increasing – progressing from simple manufactures such as extrusions and foil and targeting growth sectors such as automotive plate.

As a result of these unfair prices advantages, U.S. imports of semi-fabricated aluminum products from China grew 183 percent between 2013 and 2015, before leveling off in 2016.[8] Some of these imports into the United States are come directly from China, but China is also exporting to other countries in Asia such as Vietnam, Malaysia, and Thailand for transshipment into U.S. markets (see Figure D-4).

There is growing evidence that some of the semi-manufactures traded around the world are in fact being remelted as a substitute for primary aluminum. One company testified[9] that in some cases, semi-fabricated products from China, such as coil and rod, are being offered at prices *below* the LME-based price of primary metal. This price advantage occurs because the Chinese tax system discourages the export of primary aluminum through an excise duty of 15 percent, whereas exports of semi-finished goods are encouraged through a value-added tax rebate. Moreover, while the U.S. has imposed antidumping/countervailing duties on certain aluminum products (e.g., extrusions) from China, transshipping these items through other countries such as Vietnam circumvents these duties.[10]

While the impact of Chinese overcapacity on downstream U.S. producers has been limited to date (in part because of growing demand for aluminum in such sectors as automotive) it is apparent that the entire U.S. aluminum sector is vulnerable to the market distortions that China is causing.

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[8] Aluminum Association, based on U.S. Census Bureau statistics

[9] Statement of Henry Gordinier, CEO of Tri-Arrows Aluminum, Inc., before the U.S. Department of Commerce, June 22, 2017

[10] Testimony of Garney Scott, Chairman of the Aluminum Association, before the U.S. International Trade Commission, September 29, 2016