

Report of Meeting
Department of Defense
Strategic Materials Protection Board
Held on December 12, 2008



Report Required by Section 843 of Public Law 109-364

Office of the Under Secretary of Defense (Acquisition, Technology & Logistics)
Deputy Under Secretary of Defense (Industrial Policy)
Executive Secretary to the Strategic Materials Protection Board

December 2008

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A. Background

Congressional Direction

Section 843 of the John Warner National Defense Authorization Act for Fiscal Year 2007, Public Law 109-364, required the establishment of a Strategic Materials Protection Board (SMPB) composed of representatives of the Secretary of Defense, the Under Secretaries of Defense for Intelligence and Acquisition, Technology, and Logistics, and the Secretaries of the Military Departments. The SMPB is to determine the need to provide a long-term domestic supply of strategic materials designated as critical to national security, and analyze the risk associated with each material and the effect on national defense that non-availability from a domestic source would have. 10 U.S.C. 2533b, “Requirement to buy strategic materials critical to national security from American sources,” prohibits expenditure of appropriated funds unless certain criteria are met for specialty metals.

Section 803 of the National Defense Authorization Act for Fiscal Year 2008, Public Law 110-181, (*Reinvestment in Domestic Sources of Strategic Materials*) directed the SMPB to “perform an assessment of the extent to which domestic producers of strategic materials are investing and planning to invest on a sustained basis in the processes, infrastructure, workforce training, and facilities required for the continued domestic production of such materials to meet national defense requirements.”

Page 476 of House Armed Services Committee Report 109-89 (*National Defense Stockpile*) accompanying the National Defense Authorization Act for Fiscal Year 2006 contains a request that the Secretary of Defense “review the DoD’s current policy to dispose of material and determine whether the NDS should be re-configured to adapt to current world market conditions to ensure future availability of materials required for defense needs.”

Page 189 of Senate Appropriations Committee Report 110-155 (*Strategic and Critical Materials*) accompanying the Department of Defense Bill, 2008, contains a request that the Secretary of Defense submit a report to the congressional defense committees describing “the materials critical to the strategic defense interests of the United States, the domestic suppliers of those materials and their reliance on foreign sources of production, efforts by foreign countries to stockpile critical materials, and the steps that are being taken to ensure that strategic and critical materials not produced domestically will be available to support the defense needs of the United States during a protracted conflict.”

Prior Work of the SMPB

In its Report to Congress of its meeting of July 17, 2007, the SMPB reported that it had formed, met, and agreed:

- The term “materials critical to national security” would be taken to mean “strategic materials critical to national security” and would include those specialty metals listed in 10 U.S.C. 2533b, and any other materials that the Board chose to so designate;
- The Board should initially focus its efforts on determining the need to take action to ensure a long term domestic supply of specialty metals as designated in 10 U.S.C. 2533b; and
- To direct the Board’s Executive Secretary to conduct an initial analysis of national security issues associated with strategic materials, and to report the results of that analysis at the next SMPB meeting.

Related Activities Prior to the Second Meeting of the SMPB

To ensure consistency among the various Department activities and reporting requirements related to strategic and critical materials, the SMPB Executive Secretary formed the Strategic and Critical Materials Working Group. The Working Group, among other responsibilities, has conducted the analyses and prepared the reports requested by House Report 109-89 (*National Defense Stockpile*) and Senate Report 110-155 (*Strategic and Critical Materials*). The Working Group consists of representatives of the SMPB Executive Secretary, the Defense National Stockpile Center, the Army, Navy, Air Force, Marines, and other government agencies such as the United States Geological Survey and the Department of Commerce.

The Executive Secretary contracted with Federally-Funded Research and Development Center The Institute for Defense Analyses to perform the assessment required by Section 803 of the National Defense Authorization Act for Fiscal Year 2008 (*Reinvestment in Domestic Sources of Strategic Materials*).

To harmonize the work, the SMPB Executive Secretary established definitions for the following terms subject to final approval by the SMPB.

- Strategic Material – A material 1) which is essential for important defense systems, 2) which is unique in the function it performs, and 3) for which there are no viable alternatives.
- Material Critical to National Security (“Critical Material”) – A strategic material for which 1) the Department of Defense dominates the market for the material, 2) the Department’s full and active involvement and support are necessary to sustain and shape the strategic direction of the market, and 3) there is significant and unacceptable risk of supply disruption due to vulnerable U.S. or qualified non-U.S. suppliers

These definitions modify the terms as they were used in the Report to Congress of the July 17, 2007 meeting of the SMPB.

B. Meeting Results

Definition of Strategic Material and Material Critical to National Security.

The SMPB discussed and approved the definitions of “strategic material” and “critical material” proposed by the Executive Secretary. As a result of the modified definition for critical materials, any material designated as critical will require a risk assessment and a strategy to ensure domestic availability.

The SMPB’s Response to the Requirements of Section 803 of the National Defense Authorization Act for Fiscal Year 2008.

The SMPB chartered the Board’s Executive Secretary to conduct the assessment required by Section 803 of the National Defense Authorization Act for Fiscal Year 2008 (*Reinvestment in Domestic Sources of Strategic Materials*); and to provide the results of that assessment to the SMPB by December 2008. The SMPB reviewed and validated the assessment conducted by The Institute for Defense Analyses and agreed that it should be submitted to Congress under separate cover. The assessment (completed in September 2008, prior to the worsening global financial crisis) concluded that U.S. strategic materials producers are investing in new processing and equipment, primarily to meet increased demand for commercial aircraft applications.

The SMPB’s Response to the Requirements of House Report 109-89 and Senate Report 110-155

The SMPB reviewed and validated the work of the Strategic and Critical Materials Working Group as it responded to the requirements of House Report 109-89 and Senate Report 110-155. The reports have been consolidated into one report and will be submitted to Congressional committees under separate cover. The report recommends transforming the National Defense Stockpile into a Strategic Materials Security Program that would enable the Nation to adapt more quickly to world market conditions and to ensure the future availability of materials required for defense and national security needs.

Initial Analysis of National Security Issues Associated with Strategic Materials

The SMPB validated an *Initial Analysis of National Security Issues Associated with Strategic Materials* (**Appendix 1**) and authorized its publication in the Federal Register. Publication in the Federal Register in accordance with section 843 of the John Warner National Defense Authorization Act for Fiscal Year 2007, Public Law 109-364, which directs the Department to “publish not less frequently than once every two years in the Federal Register recommendations regarding materials critical to national security, including a list of specialty metals, if any, recommended for addition to, or removal from, the definition of ‘specialty metal’ for purposes of section 2533b of this title.”

Technical Adjustments to Terms of Reference

The SMPB revised the Terms of Reference (TOR) to reflect the modified definitions for strategic and critical materials and to give the Board more flexibility to address emerging topics of interest. Specifically, the Board approved a new Task of the Board: “At its discretion, or in accordance with new statutory requirements, the Board may address additional matters associated with strategic materials.” (revised TOR is **Appendix 2**).

Appendix 1

Initial Analysis of National Security Issues Associated with Strategic Materials

Summary

Reliable access to the materiel it needs is a bedrock requirement for the Department of Defense. However, reliable access does not always necessitate a domestic source.¹ In fact, the Department wants to take full advantage of the competitive benefits offered by access to the best global suppliers; and to promote consistency and fairness in dealing with its allies, all the while assuring that an adequate industrial base is maintained to support defense needs. Consequently, the Department uses, and sometimes may be dependent on, reliable non-U.S. suppliers. At the same time, the Department is not willing to accept foreign vulnerability which poses risks to national security. Non-U.S. suppliers represent a foreign vulnerability if their use would present an unacceptable risk that the Department would be unable to access the capabilities, products, or services that it needs, when it needs them.

The key finding of this analysis is that specialty metals, as defined in 10 U.S.C. 2533b, are not “materials critical to national security” for which only a U.S. source should be used; and there is no national security reason for the Department to take action to ensure a long term domestic supply of these specialty metals.² The “criticality” of a material is a function of its importance in DoD applications, the extent to which DoD actions are required to shape and sustain the market, and the impact and likelihood of supply disruption. The analysis showed that specialty metals are “strategic materials” which may require special monitoring and attention/action; but not, in general, a domestic source restriction.³ Should reliable supplies/capacities be insufficient to meet potential requirements for a projected conflict, other risk mitigation options, including stockpiling, could represent an effective alternative.

High purity beryllium, however, is a critical material. Even in peacetime, defense applications dominate the market; it is essential for important defense systems and unique in the function it performs. In addition, domestic production capabilities have atrophied, and there are no reliable foreign suppliers. Accordingly, the Department should continue to take those special actions necessary to maintain a long term domestic supply of high purity beryllium. In fact, the Department has established a Title III of the Defense Production Act project with U.S. supplier Brush-Wellman to build and operate a new high purity beryllium production facility.

The Strategic Materials Protection Board (SMPB) should review and validate any internal or external recommendations that identify strategic materials that are essential for a wide variety of important defense applications and for which there is a relatively high potential for

¹ For the purposes of this analysis, a domestic source is a member of the “national technology and industrial base” as defined in Title X of the United States Code, section 2500: “persons and organizations that are engaged in research, development, production, or maintenance activities conducted within the United States and Canada.”

² Congress has placed no domestic source restrictions on the ores and other basic materials that are the precursors to specialty metals. However, for truly critical materials, reliable sources of supply for such ores and other basic materials also may be necessary.

³ Notwithstanding this finding, the Department is complying, and will comply, with all statutory domestic source requirements.

supply disruption. For example, a relatively high potential for supply disruption would be represented by a situation in which reliable supplies (U.S. or non-U.S.) are projected to be insufficient to support the defense needs of the United States during peacetime and/or during a conflict. In such circumstances, DoD market intervention such as increasing or establishing reliable production capability and/or stockpiling may be an effective risk mitigation strategy.

Analysis

Specialty metals are not “critical materials.” There is no national security reason for the Department to take action to ensure a long term domestic supply of specialty metals.

The Specialty Steel Industry of North America (SSINA) produced a report in December 2005 entitled “Specialty Metals and the National Defense.”⁴ In it, the SSINA asserted that “specialty metals are vitally important to virtually every U.S. military platform” and provided a listing of the many DoD weapons systems that contain specialty metals. While many important DoD systems do incorporate specialty metals, incorporation into a DoD system does not, by itself, make a material “critical to national security.” If incorporation alone was sufficient, every type of material from plastic, to rubber and glass, would be a critical material. More discriminating criteria are needed to distinguish critical materials from the larger set of strategic materials.

The designation of a strategic material should be predicated on it meeting a “technical” criterion: the material should be essential for important defense systems and unique in the function it performs—there are no viable material alternatives available.

Critical materials are a subset of strategic materials. The Department of Defense should designate a material as “critical to national security” only if it meets the “technical” criterion of a “strategic” material; *and also meets two additional criteria:*

- “Business” criterion: The Department of Defense dominates the market for the material, and its active and full involvement and support is necessary to sustain and shape the strategic direction of the market; *and*
- “Security of Supply” criterion: There is significant and unacceptable risk of supply disruption due to vulnerable U.S. or qualified non-U.S. suppliers.

The Department agrees that strategic materials, including specialty metals, are essential for important defense systems, and in many cases are unique in the functions they perform. Therefore specialty metals are considered strategic materials. However, specialty metals do not meet the other criteria necessary to be considered critical materials.

The Department of Defense does not dominate the market for specialty metals; its active and full involvement and support is not necessary to sustain and shape the strategic direction of

⁴ SSINA is a Washington, DC-based trade association representing virtually all continental specialty metals producers. The December 2005 report is available at http://www.ssina.com/news/releases/pdf_releases/12_06_05_Defense_Paper.pdf

the market; and the risk of supply disruption is not significant. According to the SSINA, “defense applications account for less than 10% of revenues in specialty metals companies.”⁵ Recent Defense Contract Management Agency analysis of certain metals found that DoD consumes less than 1 percent of total U.S. steel production; about 6 percent of U.S. aluminum production; and between 8 and 10 percent of domestic titanium production. In 2007, U.S. and non-U.S. military end-use applications, including military aerospace, represented about 5 percent of worldwide titanium consumption. The health of the domestic specialty metals industry is, and will continue to be, determined by its ability to sell core commercial products to commercial customers.

Whether or not DoD applications are dominant in the specialty metals market, the Department has the ability, when necessary, to require that its orders be filled in advance of non-DoD orders. Under the Defense Priorities and Allocations System (DPAS; 15 CFR 700), U.S. suppliers must give DoD orders delivery preference over non-DoD (commercial) orders in the event of a supply constraint or delivery conflict. DPAS authorities, coupled with the size of the domestic specialty metals production capacity relative to limited DoD consumption, ensures the Department is able to purchase the quantity of specialty metals it needs from U.S. industry.

For a material to be elevated to “critical material” status there must also be a significant risk of supply disruption. For specialty metals, in addition to strong U.S. suppliers, there are reliable foreign suppliers. Specialty steels and metal alloys are produced globally; leading producers include Japan, South Korea, Germany, India, Brazil, Mexico, Canada, Australia, and the UK. Titanium and titanium alloys are produced in Japan, Italy, Germany, France, and the UK. Zirconium and zirconium alloys are produced in Canada, Germany, France, and Japan. Although many metals are commodities and traded throughout the global market, there are cases in which the price of a metal varies by region. Table 1 summarizes the sources and prices for a select set of metals. It highlights the extent to which such metals are imported into the United States, the largest producers world-wide and the largest importers into the United States, and differences in metal prices in domestic and foreign markets. (Note that there is no statutory domestic source restriction for titanium sponge.)

In accordance with DoD Handbook 5000.60-H, “Assessing Defense Industrial Capabilities,” reliable foreign suppliers are usually acceptable, and in fact are encouraged to allow the Department to obtain a wider competitive cost and technology base. Foreign dependence does not necessarily mean foreign vulnerability. Therefore, the Department uses foreign sources where advantageous and within the limitations of the law. However, in some circumstances foreign suppliers are not acceptable:

- Foreign sources may pose an unacceptable risk when there is a high “market concentration” combined with political or geopolitical vulnerability. A sole source supplier existing only in one physical location and vulnerable to serious political instability may not be available when needed.
- Suppliers from politically unfriendly or anti-American foreign countries, as defined by statute or U.S. Government policy, are not used to meet U.S. defense needs.

⁵ SSINA press release, June 23, 2005.

- A U.S. source may be needed for technologies and products that are either classified, offer unique warfighting superiority, or could be used by foreign nations to develop countermeasures.
- Suppliers that cannot or will not provide products for military applications for political reasons are not feasible sources.
- The Department of Defense is required by law to purchase a particular product from U.S. sources only.

Table 1. Sources and Prices for Selected Metals

| Material | Import Reliance (%) | Largest World Producers (% of world production) | | Largest U.S. Import Sources (% of U.S. Imports) | | Domestic Source Price (\$/metric ton) | Foreign Source Price (\$/metric ton) |
|-----------------------|---------------------|---|----|---|----|---------------------------------------|--------------------------------------|
| Aluminum | 26 | China | 32 | Canada | 55 | \$1,942 | \$1,852 |
| | | Russia | 11 | Russia | 17 | | |
| | | Canada | 8 | Brazil | 4 | | |
| Raw Steel | 12 | China | 37 | Canada | 17 | \$756 | \$710 |
| | | Japan | 9 | E.U. | 16 | | |
| | | U.S. | 7 | Mexico | 11 | | |
| Cobalt | 78 | Congo | 36 | Norway | 21 | \$43,266 | \$44,899 |
| | | Canada | 13 | Russia | 19 | | |
| | | Zambia | 11 | Canada | 10 | | |
| Copper | 37 | Chile | 37 | Chile | 39 | \$3,715 | \$3,716 |
| | | Peru | 8 | Canada | 32 | | |
| | | U.S. | 8 | Peru | 15 | | |
| Nickel (metal) | 21 | Russia | 19 | Canada | 41 | \$11,248 | \$10,698 |
| | | Canada | 15 | Russia | 16 | | |
| | | Australia | 11 | Norway | 11 | | |
| Titanium (sponge) | 64 | Japan | 28 | Kazakhstan | 51 | \$18,060 | \$7,800 |
| | | Russia | 23 | Japan | 37 | | |
| | | China | 23 | Russia | 7 | | |
| Zinc (refined) | 58 | China | 27 | Canada | 64 | \$1,231 | \$1,152 |
| | | Peru | 14 | Mexico | 17 | | |
| | | Australia | 13 | Kazakhstan | 9 | | |
| High Purity Beryllium | Net Exporter | U.S. | 77 | Kazakhstan | 42 | \$357,000 | Not Available |
| | | China | 15 | Germany | 24 | | |
| | | Mozambique | 5 | U.K. | 6 | | |

Sources: USGS 2008 Mineral Commodities Summaries, American Metal Market, COMEX, CRU Monitor, London Metal Exchange, Metal Bulletin, New York Dealer, New York Mercantile Exchange, Platts, Purchasing Magazine.

In some instances, the Department must pay a premium in order to maintain a domestic production capability. For “critical” materials and comparable “critical” military-unique systems, subsystems, and components, the Department is willing to pay that premium to mitigate risk and ensure national defense/security. However, in addition to a price premium, in such cases the Department also may assume risk associated with insufficient production capacity to meet rapidly increased contingency or operational requirements. “Captive” DoD markets frequently size themselves to meet steady-state “peacetime” DoD demand and may not be able to surge production as rapidly as desired.

For example, the Department recently experienced a significant shortfall in thin gauge MIL-A grade steel armor production capacity necessary to support rapid production of the Mine Resistant Ambush Protected (MRAP) vehicle and other operationally-important ground vehicles requiring protective armor. The availability of steel, generally, was not a production constraint; but the availability of the specialized thin gauge, quenched and tempered steel (a “specialty metal”) needed for DoD armor applications was a constraint. The Department was required to waive various statutory domestic source restrictions to meet operational requirements. The primary “beneficiary” of the waivers was U.S.-located Evraz-Oregon Steel. Although Oregon Steel quenches and tempers its steel in the United States, it does not have a blast furnace and buys its ingot from Mittal in Mexico. The addition of Oregon Steel increased relevant domestic production capacity by about 40 percent.

In summary, the fact that specialty metals are essential for important defense systems does not mean that specialty metals are critical materials, nor that national security requires that only U.S.-produced specialty metals be used for DoD applications.

High purity beryllium is both a strategic and a critical material.

High purity beryllium is essential for important defense systems, and it is unique in the function it performs. High purity beryllium possesses unique properties that make it indispensable in many of today’s critical U.S. defense systems, including sensors, missiles and satellites, avionics, and nuclear weapons;

The Department of Defense dominates the market for high purity beryllium and its active and full involvement is necessary to sustain and shape the strategic direction of the market.

There is a significant risk of supply disruption. Without DoD involvement and support, U.S. industry would not be able to provide the material for defense applications. There are no reliable foreign suppliers that could provide high purity beryllium to the Department.

Recognizing that high purity beryllium meets all the conditions for being a critical material, the Department should take, and has taken, special action to maintain a domestic supply. The Department has used the authorities of Title III of the Defense Production Act to contract with U.S. firm Brush-Wellman, Inc. to build and operate a new high purity beryllium production plant. The new facility will produce pure beryllium capable of meeting the specifications required for myriad national security applications.

Appendix 2

Strategic Materials Protection Board Terms of Reference

(revised December 12, 2008)

Creation and Membership of the Board

Section 843 of P.L. 109-364 added section 187 to title 10 of the United States Code. 10 U.S.C. §187 directs the Secretary of Defense to establish a Strategic Materials Protection Board (SMPB) composed of representatives of the Secretary of Defense, the Under Secretary of Defense for Acquisition, Technology, and Logistics (USD(AT&L)), the Under Secretary of Defense for Intelligence (USD(I)), and the Secretaries of the Army, Navy, and Air Force.

By memorandum dated May 4, 2007, the Secretary of Defense delegated responsibility to the USD(AT&L) to chair the Board. On May 22, 2007, the USD(AT&L) delegated to the DUSD(IP) responsibility to act as the Board's Executive Secretary.

At the invitation of the Chairman, other officials may be asked to participate as advisors to the Board.

Tasks of the Board

The tasks of the Board, along with suggested strategies to accomplish each, are provided below. The language in **Bold** is the statutory language.

Determine the need to provide a long term domestic supply of materials designated as critical to national security to ensure that national defense needs are met.

Analyze the risk associated with each material designated as critical to national security and the effect on national defense that the non-availability of such material from a domestic source would have.

The statute does not define the term "materials critical to national security." However, 10 U.S.C Section 2533b, identifies certain specialty metals using a similar term, "strategic materials critical to national security." Therefore, in order to distinguish between terms the following definitions will be used for the purposes of the SMPB.

The term “Strategic Material” shall mean – A material 1) which is essential for important defense systems, 2) which is unique in the function it performs, and 3) for which there are no viable alternatives. Strategic Materials include those specialty metals listed in 10 U.S.C. 2533b, and any other materials the Board may designate.

The term “Material Critical to National Security” (or “Critical Material”) shall mean – A strategic material for which 1) the Department of Defense dominates the market for the material, 2) the Department’s full and active involvement and support are necessary to sustain and shape the strategic direction of the market, and 3) there is significant and unacceptable risk of supply disruption due to vulnerable U.S. or qualified non-U.S. suppliers. Accordingly, the Board should initially focus its efforts on determining which strategic materials are “materials critical to national security” and require a long term domestic source of supply.

This examination should consider:

- the criticality of strategic materials (including specialty metals) to defense applications;
- the risk associated with strategic materials (including specialty metals), including:
 - whether there are functional alternatives available;
 - whether DoD dominates the market for the specialty metals;
 - whether there are reliable foreign suppliers that could supply DoD;
 - whether DoD’s active involvement is necessary to sustain and shape the strategic direction of the strategic materials (including specialty metals) market,
 - including DoD relative importance in the market, and
 - the financial and technological health of domestic producers;
- the effect on national defense that non-availability from a domestic source would have; and
- any other relevant national security aspects of strategic materials (including specialty metals).

The Board may decide to amend this construct and review additional materials in the future as needed.

Recommend a strategy to the President to ensure the domestic availability of materials designated as critical to national security.

The Board will make such recommendations as appropriate.

Recommend such other strategies to the President as the Board considers appropriate to strengthen the industrial base with respect to materials critical to national security.

The Board will make recommendations to the President as appropriate.

After each meeting of the Board, the Board shall submit a report to Congress containing the results of the meeting and such recommendations as it determines appropriate.

The Board's Executive Secretary will prepare the required reports to Congress under the direction of the Board and coordinate the report with Board members. The Chairman of the Board will submit the reports to Congress.

The Board shall publish in the Federal Register, at least once every two years, recommendations regarding materials critical to national security, including a list of specialty metals, if any, recommended for addition to, or removal from, the definition of 'specialty metal' for the purposes of 10 U.S.C 2533b.

The Board's Executive Secretary will publish any such recommendations at the direction of the Board.

At its discretion, or in accordance with new statutory requirements, the Board may address additional matters associated with strategic materials.

Operation of the Board

The Board will meet as determined necessary by the Chairman, but not less frequently than once every two years.

The Executive Secretary will provide support as necessary to arrange, conduct, and implement the outcomes of such meetings.

After each meeting, the Executive Secretary will prepare a report to Congress containing the results of the meeting and such recommendations as the Board determines appropriate. The report will be coordinated with the Board, and submitted by the Chairman of the Board.

The Executive Secretary will publish in the Federal Register, at least once every two years, any Board recommendations regarding materials critical to national security, including a list of specialty metals, if any, recommended for addition to, or removal from, the definition of 'specialty metal' for the purposes of 10 U.S.C 2533b.

Dissolution of the Board

Section 843 of P.L. 109-364 did not provide for the dissolution of the Board. Should the Board decide that its continued existence is no longer valuable; the Executive Secretary will submit a legislative proposal to have the Board dissolved.

Guiding Principles and Board Determinations

(To be updated by the Executive Secretary at the direction of the Board)

In accordance with Section 843 of P.L. 109-364, the Board intends to only review the strategic criticality of materials; it does not intend to review defense systems, items, or components.