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Treasury Dept. Uses 'Flawed' Chinese Data To Rule In Favor Of China's Currency Practices

The U.S. Treasury Department is upholding its controversial use of Chinese government trade data as the basis for its twice-yearly determination of whether China is manipulating its currency, in effect dismissing charges by the China Currency Coalition (CCC) that it is relying on "skewed numbers."

BY KEN JACOBSON

The CCC's counsel, David Hartquist, last week called the department's analysis of China's currency policy "terribly flawed," commenting in the wake of the agency's latest "Report to Congress on International Economic and Exchange Rate Policies," released on May 10.

While the report found that "far too little progress has been made in introducing exchange rate flexibility," it said it was "unable" to affirm that China had been manipulating the yuan — or, in Treasury's exact words, "that China's foreign exchange system was operated during the last half of 2005 for the purpose (i.e., with the intent) of preventing adjustments in China's balance of payments or gaining China an unfair competitive advantage in international trade."

Hartquist countered that "year after year, the Chinese government's official trade data report inflated values for China's imports that cannot be squared with the trade data of China's 40 largest trading partners," noting that China's data "coincidentally favor [its] view that the yuan is not undervalued."

He described CCC, which groups several dozen U.S. industrial, service, agricultural and labor organizations, as "absolutely bewildered" by Treasury's exclusive use of the Chinese numbers in its analysis, calling the practice "demonstrably wrong."

A Treasury Department spokeswoman, Deputy Assistant Secretary for Public Affairs Brookly McLaughlin, said there were two reasons for the agency's use of numbers supplied by China: 1) "These are the official data"; and 2) "They are the only source of the non-merchandise trade components" of China's balance of payments. She declined further comment.

The relevance of the second point was disputed by Patrick McGrath, managing director of Georgetown Economic Services, which provides CCC's analysis. He noted that, according to China's own data, China imported $72 billion in services in 2005 while exporting $62 billion, a deficit of $10 billion for the year.

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Los Angeles Economy Is Buoyed By Growing Imports

BY RICHARD McCORMACK

The rapid growth in imports is working wonders for the economy of Los Angeles. "International trade in Southern California is big and fast growing," says the Los Angeles County Economic Development Corp. (LACEDC).

Increased trade through the Los Angeles Customs District, which includes the ports of Los Angeles and Long Beach as well as freight movement through Los Angeles International Airport, created 45,500 new jobs in 2005. A total of 450,100 workers are now engaged in the movement of goods into and out of LA ports.

"Some of these jobs tend to be high wage and are found in a wide variety of activities, including vessel operations, services to vessels, cargo

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Commerce Dept. Drops Bid To Place Severe Restrictions On Foreign Researchers In U.S.

BY KEN JACOBSON

The Commerce Department's Bureau of Industry and Security (BIS) last week said it was withdrawing a pair of proposed measures that could have strengthened the barriers against access to sensitive technology faced by foreign nationals who perform scientific research in the U.S.

The bureau's May 31 announcement came just more than a week after another notice, which BIS had likewise placed in the Federal Register, that it would create a federal advisory committee to review and provide recommendations on deemed-export licensing policy, which the now-shelved proposals would have modified.

The term "deemed export" refers to the release to a foreign national within the United States of a technology that is controlled under the U.S. Export Administration Regulations (EAR), which BIS administers.

According to the EAR, "such release is deemed to be an export to the home country or countries of the foreign national"; as such, it could require a license just as if it had been physically shipped abroad. Commerce Department figures show that 995 of the 15,534 export-license applications processed by BIS in fiscal-year 2004 were for deemed exports; of those 995, only 1 percent were denied.

The proposed policy revisions would have affected "foreign visitors or workers at U.S. private, public or government research laboratories and private companies," in the words of the Commerce Department's Office of Inspector General (OIG), the recommendations of whose March 2004 report prompted BIS to float the changes in May 2005.

By BIS's account, the ensuing comment period brought 311 reactions: 88 from academic institutions, 25 from trade associations, 22 from companies, 20 from academic associations and four from U.S. national laboratories.

The bureau's May 31 notice made clear that the comments overwhelmingly opposed the two proposed changes and played a major role in its decision to drop them. It also said its decision to establish the advisory committee was "a result of the extensive nature of the public comments."

BIS was described as "responsive" and its notices as evidence that BIS "heard our concerns, read our comment letters, and took what we said seriously" by Amy Scott, the senior federal relations officer at the Association of American Universities (AAU), which groups 62 research universities in the U.S. and Canada.

How great a stake academic institutions had in heading off the proposed revisions is indicated by a comment that AAU's interim president, John Vaughn, made on the announcement that the advisory committee would be formed: "The original [OIG] recommendations would not only have disrupted research but would have been tantamount to hanging a sign on our university laboratories saying 'Top International Talent Not Welcome.' "

In withdrawing the first of the two proposed changes, to base deemed-export licenses on a foreign national's country of birth, BIS said it had "determined that the current licensing requirement based upon a foreign national's country of citizenship or permanent residency is appropriate."

The reasoning behind this decision, as set forth by the bureau in the Federal Register, mirrored "many comments" it had received arguing that "obtaining citizenship demonstrates an affirmative declaration of affiliation or loyalty toward a particular sovereign entity in ways that the circumstances of a person's birth does not."

The second revision would have broadened the definition of "use" that applies to controlled technologies and thereby significantly increased the likelihood that participation in research by a foreign national would require a deemed-export license. BIS noted that it had received numerous comments contending that the change "would capture too many routine operations carried out by students/employees," something that would "constitute a large (and generally unnecessary) compliance burden" and "have a chilling effect on U.S. research efforts conducted by industry and universities alike."

The proposed rule would "have a chilling effect on U.S. research efforts conducted by industry and universities alike."

The comments further argued, according to BIS, that the OIG's report had "failed to proffer any evidence" that revising the definition would yield the "improvements to national security" it envisioned. The current definition of "use," the bureau concluded, "adequately reflects the underlying export-controls policy rationale" under the EAR.

On a third point, at the heart of which is the question of whether fundamental research is subject to regulation under export controls at all — and on which BIS and the academic community do not see eye to eye — BIS's May 31 notice declares that "expanded outreach is required."

According to that notice, "if the intent is to make the information resulting from the fundamental research publicly available," it is "usually not subject to the EAR." In this, fundamental research stands in contrast to

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Manufacturing Issues Make It Onto The Senate's Defense Planning & Spending Agenda

Manufacturing programs at the Department of Defense have received a boost from the Senate Armed Services Committee. Senators say that recent reports from the National Academy of Sciences and the Defense Science Board (DSB) raising concerns about U.S. industrial capabilities require that budgets for programs associated with the printed circuit board industry and the Pentagon's Manufacturing Technology (ManTech) program receive additional funding.

In the Senate Report (109-254) accompanying the recently passed 2007 Defense Authorization bill (S-2766) the Committee provides the Joint Defense Manufacturing Technology Panel with $5 million to execute the recently created High Performance Defense Manufacturing Technology Research and Development program. This program was endorsed by the DSB and "calls for public-private partnership incentives, industry roadmaps for new manufacturing and technology processes, test beds for technology transition and other cooperative programs," according to the Committee.

The committee says DOD needs to heed the advice of the Defense Science Board by allocating 1 percent of the total Research Development, Test and Evaluation budget to the ManTech program.

A host of manufacturing programs receive additional funding.

In the area of **advanced microelectronics manufacturing** (PE 62120A), senators increased the budget from $38.4 million to $41.4 million to develop new low-volume manufacturing of flexible electronics "whose defense applications could include flexible displays, lightweight miniaturized sensors and portable power systems," says the Senate Armed Services Committee report. "The committee notes that this type of effort is consistent with the Defense Science Board's recommendation in its recent report, entitled 'High Performance Microchip Supply,' to develop technology and equipment for production of low-volume microelectronics to meet unique Department of Defense needs."

The Defense Department's **nanotechnology** budget (PE 63004A) would increase by $2 million to $76.7 million.

The **Army's ManTech budget** (PE 63004A) would increase by $8.5 million, from $68.1 million to $76.6 million, including an extra $3 million for manufacturing demonstrations to develop "efficient, agile manufacturing cells to better support warfighter needs for critical machined parts; $2 million for large structure titanium machining processes; and $3.5 million for super pulse laser systems development." The Senate recommends an additional $3 million be spent on "novel packaging and interconnect technologies to advance printed circuit board technology."

In the area of **Army material technology** (PE 62105A), the Senate Armed Service Committee increased funding from $18.8 million requested by President Bush to $24.1 million. Of the additional money, $1 million is provided for the development of flexible, lightweight thermoplastic composite body armor; $1.6 million for affordable "multi-utility materials"; $500,000 for simulations of improvised explosive devices; $300,000 for a control system for laser powder deposition manufacturing processes; and $2 million for munition shape charge control research.

The **Air Force ManTech program (PE 78011F) also received a boost:** up $10 million from the budget request of $36.7 million, including $8 million for the development of advanced prototyping of nanomaterials and $2 million for rapid manufacturing and repair of composite components for high temperature applications. It also adds $3 million to the aircraft

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Commerce R&D Regs ...(From preceding page)

"research related to industrial development, design, and production, the results of which ordinarily are restricted for proprietary reasons or specific national-security reasons."

BIS adds, however, that even if the "product" of fundamental research falls outside the scope of export regulation, sponsoring institutions may still need to seek licenses under deemed-export requirements "if during the conduct of the research controlled technology is released to a foreign national."

Confirming that this issue represents a point of "disagreement between the research universities and Commerce," AAU's Scott calls it "a perfect discussion for the soon-to-be-formed Deemed Export Advisory Committee."

Recruiting will be open until July 21 for members of the committee, which is to consist of "representatives from industry, academia and other experts in the field" and will have a year to complete its work. Because members will need a "Secret" security clearance before being appointed, a BIS spokesman was unable to give a target date for the panel's formation.

BIS's purpose in establishing the committee, it said in announcing it, is "to ensure that the deemed-export policy [in force] best protects U.S. national security, while striving not to impede the ability of U.S. industry and academic research to continue at the leading edge of technological innovation."

Treasury Uses Chinese Data In China's Favor...(From page one)

This he contrasted with China's merchandise trade surplus for 2005: $148.9 billion according to the Chinese government and the U.S. Treasury Department, $376.2 billion as calculated by Georgetown Economic Services for CCC using the figures for bilateral trade with China issued by 39 trading partners that account for more than 80 percent of its trade.

"There is no way on God's green earth that counting in China's service balance is going to mitigate these huge trade-balance surpluses that the partner data show the Chinese running every single month," McGrath observed.

The relevance of McLaughlin's first point — that the official data are being used because they are official — may lie more in the realm of political sensitivities than economic analysis.

In collating the CCC figures, Georgetown Economic Services used U.S.-China data from the Census Bureau, which put the countries' 2005 bilateral trade balance in China's favor by over $200 billion — well above China's official figure of $116.6 billion for its surplus with the U.S., and even one-third again as high as China's figure for its worldwide merchandise trade surplus.

"The frustrating thing about this is that both Treasury and the [International Monetary Fund] appear to be making very important policy decisions based upon the wrong numbers," said Hartquist. "We would never stand for that within the United States government. If the administration or Congress is working on regulations or passing laws, they want the correct data in order to make a proper analysis."

CCC is not alone in questioning Treasury's view of China's currency practices. Addressing then-Treasury Secretary John Snow at a May 18 hearing on the agency's currency report, Sen. Charles Schumer (D-N.Y.) called the language exculpating China a "legalistic dodge."

Schumer, co-sponsor with Sen. Lindsey Graham (R-S.C.) of a bill (S. 295) that would impose a 27.5 percent duty on Chinese goods as a countermeasure for China's alleged exchange-rate manipulation, charged that Treasury's report was worded to allow the administration to escape "stating publicly what's obvious to all of us: China is a manipulator and the administration is simply afraid to say so."

Comparison of China-Reported Data with Trading Partner Data
2005 Bilateral Trade Surplus/Deficit(-)
Million U.S. Dollars

Country	China Data	Partner Data	*Understatement*
Canada	$4,517	$18,574	***$14,057***
Japan	($11,347)	$23,117	***$34,464***
European Union (15)	$69,312	$112,661	***$43,349***
United States	$116,640	$203,781	***$87,141***

(Source: Georgetown Economic Services and China Currency Coalition)

Congress Hopes Cash Prizes Will Spur Innovation In Hydrogen

Legislation that would establish cash prizes designed to entice researchers to work toward breakthroughs in hydrogen technology is making its way through Congress. No sooner had the House passed its version of the H-Prize Act of 2006 (H.R. 5143) by an overwhelming, 416-6 vote last month than a companion version (S. 2796) was introduced in the Senate.

The bill, inspired by the success of the Ansari X Prize in inducing private investors to finance human space flight, would authorize $50 million in federal funding over 10 years to make possible the award, as merited, of prizes in three categories:

- Technological Advancement: Four prizes of up to $1 million each could be awarded every two years for outstanding achievements in the production, storage, distribution and utilization of hydrogen.
- Prototypes: One prize of up to $4 million could be awarded every two years for a working prototype of a hydrogen-based vehicle or other product that meets specific performance goals.
- Transformational Technologies: A single grand prize of $10 million, to be augmented by matching funds raised from non-federal sources, could be awarded in the period 2007-2016 for a breakthrough technology in the distribution or production of hydrogen.

An additional $2 million annually would be authorized for the administration of the program by the Department of Energy, which would consult with federal agencies, private organizations and the National Academies of Sciences and Engineering in developing criteria for judging the competitions.

The chairman of the House Science Committee, Rep. Sherwood Boehlert (R-N.Y.), described the competitions created under the bill as "a useful supplement to our ongoing Department of Energy research and development programs," which he said "must and will continue."

"Because the technology [involved] is long-range," Boehlert observed, "prizes are a logical way to get as many people working on hydrogen in as many ways as possible."

Sen. Lindsey Graham (R-S.C.), sponsor of the Senate version, called the bill "a clear signal from the federal government that we are interested [in] and believe in a hydrogen-based transportation economy. The H-Prize puts our money where our mouth is."

S. 2796 is now before the Senate Energy and Natural Resources Committee.

Physical Sciences R&D Spending Boost Clears First Hurdle In Congress

The House has delivered an initial endorsement for the administration's American Competitiveness Initiative (ACI), voting to provide a 15 percent funding increase in 2007 for the Department of Energy's Office of Science (DOE-OS). DOE is one of the three agencies chosen as vehicles for ACI's stated goal of doubling "priority basic research in the physical sciences and engineering" over the next ten years.

BY KEN JACOBSON

The version of the Energy and Water Development Appropriations bill (H.R. 5427) that passed by a 404-20 vote on May 24 would raise DOE-OS's budget by $535 million, from just under $3.6 billion to something over $4.1 billion for next year.

This represents the lion's share of the administration's request for a $910 million increase in 2007 to be spread across DOE-OS and ACI's two other targets, the National Science Foundation (NSF) and the laboratories of the National Institute of Science and Technology (NIST). NSF and NIST are funded under the Science, State, Justice & Commerce Appropriations bill, which was not yet scheduled to be taken up in subcommittee as *MTN* went to press.

This last fact is only one sign of how long the road may prove from ACI's opening victory in the House late last month to its ultimate realization. Another is that Senate appropriators are not expected even to begin considering their versions of the 2007 spending bills until July. And unless the Senate and House manage finally to agree on a Budget Resolution, they will be working under different ceilings for discretionary spending, which promises to complicate the appropriations process further.

Moreover, with budget constraints tight and November's mid-term elections looming, neither party is apt to be in a rush: Republicans, because the numbers, once nailed down, are likely to disappoint constituents; Democrats, because they hope to recapture the majority in at least one house and would rather appropriate from a stronger position. So continuing resolutions that freeze agency budgets at this year's levels, rather than fresh appropriations, may order spending priorities well into the new fiscal year.

Last month's first step is nonetheless seen as encouraging by advocates of increased research funding. The Energy-Water appropriations bill "offers an early indication that Congress will support ACI increases for fundamental research," according to an analysis by the American Association for the Advancement of Science (AAAS),

The House bill provides DOE-OS with what AAAS portrays as "the best of all worlds: new facilities would come on line and others would begin construction, operating times for users would be expanded at existing facilities, and increasing numbers of external researchers could win research grants." It would do so without taking from other DOE research activities.

The $9.3 billion in research funding it provides across the department represents "an increase of $605 million, or 6.9 percent" over this year's total, says AAAS. That level of funding "would reverse the sliding DOE R&D portfolio of the last few years."

Of the $605 million, AAAS attributes $508 million to DOE-OS, the rest of whose $535 million rise would go to "non-R&D items." Energy Supply & Conservation — targeted under the administration's Advanced Energy Initiative or AEI — would see a jump of $134 million or 17.2 percent under the bill. In all, the two accounts would be up $642 million.

Bringing the R&D total down to $605 million were a few losers, chief among them Radioactive Waste Management, which would go from $80 million this year to $56 million in 2007 in line with the president's request. Fossil Energy R&D and Atomic Energy Defense Activities would also decline from this year — by 1.6 percent and 0.1 percent, respectively — but the House bill would still provide the former $141 million and the latter $82 million more than the administration asked.

Within DOE-OS, the big winners would be Basic Energy Sciences, with a rise of $287 million, or 25.3 percent, from this year's $1.1 billion. Other accounts that rise include Advanced Scientific Computing Research, whose 35.6 percent increase would bring it up $84 million, to $319 million; and Nuclear Physics, which would get an $87 million, or 23.7 percent, boost to $454 million.

The only apparent loser in DOE-OS would be Biological & Environmental Research, giving back $40 million, or 6.9 percent — but that loss would be essentially on paper. AAAS estimates that $129 million of the account's 2006 budget of $580 million consisted of earmarks and says that, since the $540 million provided it by the current House bill includes only $30 million in earmarks, its core funding would actually rise, by $59 million or 13 percent.

Meanwhile, the winners in the Energy Supply & Conservation account under H.R. 5427 would be Biomass and Biorefinery Systems, up from $91 million this year to $150 million in 2007, a 65 percent jump; Solar Energy, whose 78.5 percent increase would take it from $83 million now to $148 million next year; and Hydrogen Technology, which would move to $196 million from its current $156 million, a rise of 25.8 percent.

The AAAS analysis may be found online at http://www.aaas.org/spp/rd/doe07h.pdf.

LA Economy...(Continued from page one)

handling, surface transportation (rail and truck), air cargo, trade finance, freight forwarding, customs brokers, insurance and government agencies," notes the LACEDC.

The impact of increased activity at the ports is leading to higher real estate values for industrial property. "Even though manufacturing employment in the region is not growing, the industrial vacancy rate was only 2 percent at year end 2005," notes the LA economic development agency. This is the lowest vacancy rate for industrial property in the nation. "Large blocks of land are hard to find in Los Angeles County, especially close to the ports," says the LACEDC. San Gabriel Valley, which is in the vicinity of port area, had an industrial vacancy rate of only 1.6 percent at the end of last year.

The value of two-way trade handled by the Los Angeles port district increased by 11.2 percent in 2005 to $294 million. The New York Customs District was in second place in the country at $267.5 million (up 9.1 percent), followed by Detroit at $228.5 million (up 11 percent). For the entire state of California, two-way international trade totaled a record $346.3 billion, up 9.8 percent over 2004.

The highest value export from the Los Angeles Customs District was "electrical apparatus" with a value of $10.8 billion, slightly down from 2004. "Since these are small, high-value items, 93.5 percent moved by air," says the LACEDC. "A distant second was 'flying devices' at $5.3 billion, followed by electronic machinery at $5 billion and measuring devices at $4.9 billion."

The top import into the LA Customs District was electronic machinery at $31.8 billion, followed by motor vehicles at $27.7 billion, (up from $24.9 billion in 2004), and magnetic and radio recording and playback equipment at $20.7 billion, up from $18.3 billion in 2004.

China was the largest exporter of goods into the Los Angeles port district, with $92.9 billion worth of product, up 18.4 percent from 2004. Japan was in second place at $34.8 billion, up 7 percent from 2004, followed by South Korea in third place at $10.9 billion.

The U.S. exported $16.1 billion to China through the LA ports and $11.6 billion to Japan. Total two-way trade with China stood at $109 billion. The two-way trade deficit with China for the LA port district stood at $76.8 billion in 2005, up from $65.9 billion in 2004.

"LACD exports to China were dominated by electrical apparatus, raw and intermediate materials and machinery," says the LACEDC. "Many of those materials and components come back to the U.S. in the form of finished goods. China now accounts for an outsized portion of some types of manufacturing (e.g., half of the world's shoe production). This has caused resentment in many developed countries. Yet nearly 60 percent of China's exports were shipped by firms at least partly owned by foreigners. In the end, foreign companies, including many American firms, make the most money from such arrangements."

While the U.S. Treasury Department recently determined that China is not manipulating its currency, the LACEDC believes otherwise. "The 2 percent revaluation of China's renminbi (RMB) last July was largely seen as a token measure to head off a more punitive action from the Congress," it notes in its annual report on "International Trade Trends & Impacts." "Still tightly controlled by the government, the RMB has since appreciated by just 1.3 percent. The small appreciation does virtually nothing to reduce the U.S.-China trade imbalance, which reached $195 billion in 2005. China's foreign reserves, meanwhile, continue to rise. As of the end of March, 2006, it reached $875 billion. China's purchases of U.S. Treasury bonds and corporate bonds have helped keep long-term interest rates in the U.S. lower than they would be otherwise, which further promotes consumer spending. The surge in foreign reserves is a sign that China's currency is kept artificially low for the benefit of promoting exports. In effect, China is practicing a new form of mercantilism — accumulating foreign currency and securities instead of investing and spending the earnings productively."

Other ports throughout the country saw substantial gains in traffic last year, according to the LACEDC analysis. Two-way trade through the Seattle customs district increased 15 percent to $100 billion. San Francisco traffic increased 5.5 percent to $100.4 billion. Houston had the strongest growth of 30.2 percent, due to the rise in oil imports and diversions of traffic away from New Orleans. Buffalo's Custom district recorded the least amount of growth, 3.1 percent. The value of two-way trade through the San Diego Custom district was $43.4 billion, up 10 percent. "All U.S. ports are struggling with capacity issues," says the LACEDC.

Los Angeles/Long Beach remained the fifth most busy port in the world last year, moving 14.194 million containers (TEUs), more than double the amount moved in 1997 (6.4 million). Singapore moved into first place in the world last year handling 23.1 million TEUs, while Hong Kong slipped into second place with 22.4 million TEUs. Shanghai was in third at 18.1 million TEUs, up from 14.4 million TEUs in 2004. Shenzen was in fourth place with 16.2 million TEUs. "All eyes in 2006 are on Shanghai due to the recent opening of a major port facility there," says LACEDC.

End Of An Era In SoCal

After seven decades of production, airplane manufacturing in Southern California is coming to an end. The last Boeing 717 has left the factory in Los Angeles, and there are no new orders for the C-17, according to the Associated Press. If the Defense Department does not place new orders for the C-17, then the last airplane to be produced in Southern California will roll off the assembly line in 2008, ending seven decades of production during which California was a central hub of U.S. aerospace production.

U-Mass Wins $16-Million Grant To Create Nanotechnology Center

The University of Massachusetts Amherst has won a five-year, $16-million grant from the National Science Foundation (NSF) to establish a research facility whose mission will be "to move nanotechnology from laboratory innovation to manufacturable components and devices."

The Center for Hierarchical Manufacturing (CHM), touted by the university as "one of the nation's elite nanotechnology centers," will concentrate its efforts in nanoelectronics, bionanotechnology, and new materials and processes. The term "hierarchical" refers to nanoresearchers' need to connect materials of many sizes — and thus to work at multiple levels, or hierarchies — in order to devise usable products.

CHM is to receive $2 million in matching funds through the state's John Adams Innovation Institute that will be dedicated to providing specific incentives to linking Massachusetts firms with the center's research and technology-transfer activities. As an overall $5 million match is required for the endeavor, additional funds are being sought from the state's legislature.

Partners from industry, other academic institutions and the government and nonprofit sectors will be participating in the effort, one of whose objectives is to create and host what UMass Amherst describes as "a dynamic Web-based clearinghouse service as the go-to site for reliable data and information for the nanomanufacturing R&D community."

According to the university's president, Jack Wilson, CHM's emphasis on manufacturing plays to his institution's strengths. "Many of our approaches are inherently manufacturable," he states.

"While we are developing fundamentally new approaches to creating devices, we are focused on those techniques that can be inserted directly into the manufacturing processes that industry already uses, so it will be relatively easy to move from basic research to industrial application."

Areas of research focus specified for CHM are: ordered arrays over large areas in block copolymers; imprint lithography with new materials; stable 3-D nanoporous structures; block copolymer tissue engineering scaffolds; functional surfaces, particles and device layers; and nanoscale device design.

The center will conduct applications-oriented projects and create system-level test beds in the following domains: 3-D nanoscale capacitors for memory devices; block copolymer arrays for nonmagnetic data storage; 3-D mesoporous structures, including ultra-low dielectric constant films; imprint lithography for devices; next-generation photovoltaics; nanostructured hydrogels for tissue engineering; nanoscale circuitry; nanoparticles for cancer therapy; and other areas that may emerge.

More information on CHM is available online at www.umass.edu/chm/.

West Coast Universities In Nano Tie-Up

Stanford, UCLA, UC Berkeley and UC Santa Barbara have created a new Western Institute of Nanoelectronics to be headquartered at UCLA's engineering school. The institute will employ 30 "eminent" researchers to explore the development of "spintronics" for the making of semiconductors. The program, to be headed by UCLA engineering professor Kang Wang, will involve 10 researchers from six semiconductor companies providing funding as well as students and other faculty from the universities involved.

"We are talking about an unprecedented opportunity to help define a technology that can exploit the idiosyncrasies of the quantum world to provide key improvements over existing technologies," says Wang. Spintronics should allow for the production of semiconductors with features smaller than 65 nanometers.

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Pentagon Assesses China's Impact On Metals Used In Military Systems

Skyrocketing demand in China for metals is helping drive up the prices of steel and aluminum for the production of U.S. weapons systems, leading to longer lead times for materials, according to the Office of Industrial Policy at the Department of Defense. Chinese demand for titanium remains small (about 5 percent of the world's total) and, although growing at 70 percent per year, is not the reason prices of titanium doubled in both 2004 and 2005.

Throughout most of the '90s, China was consuming about the same amount of steel as the United States — 100 million metric tons per year. But China now stands alone in the world in first place by a long shot, consuming 274 million metric tons, more than United States and Japanese consumption combined. China consumes 39 percent of the world's steel, and has become a net exporter of the metal.

DOD's Office of Industrial Policy (IP) doesn't expect prices of steel to continue soaring. The reason: China is adding capacity and the production from that capacity will soon find its way onto the world markets. "Given China's competitive advantages (specifically, favorable exchange rates and low labor costs), and also the fact that analysts expect that the prices for steel will continue to decrease the next five years, U.S. steel suppliers may be facing a challenging future," says the Pentagon's Industrial Policy shop in an assessment of the impact China is having on steel, aluminum and titanium prices and availability.

Growth in the Chinese market for steel continues to be robust, almost doubling from 1999 to 2003 and increasing by 15 percent in 2004. "As U.S. and non-U.S. firms outsource manufacturing (especially automobiles) to China for lower-cost labor, metals demand also shifts to China," says the report. "In 2003-2004, world steel demand growth outpaced production and prices rose accordingly. In response to elevated demand, steelmakers around the world have expanded capacity. This phenomenon is most apparent in China."

Driving demand in China is the surge of construction of apartment buildings and infrastructure, which accounted for over half of Chinese steel consumption in 2004. "The construction boom is far from over, however," says the IP office. "The majority of people in China still live in small, low-quality residences, and many analysts expect that as incomes rise, the demand for new, more spacious housing will be strong for years to come."

The second largest consumer of steel in China (18 to 25 percent) is in the production of machinery. "Steel required for machinery grew by a factor of 22 from 1998 to 2002, fueled both by increasing demand for machines to produce goods in China and by China's emergence as a major exporter of machine tools," notes the Industrial Policy office.

Growing world demand for steel led to increased lead times in military programs. "In 2004, steel sheet lead times increased 86 percent (from 14 weeks to 26 weeks), steel plate 60 percent (from 20 weeks to 32 weeks), and steel bar 120 percent (from 10 weeks to 22 weeks)," notes the IP office.

Lead times for aluminum products increased by similar amounts and, for titanium, lead times have increased by 40 percent for most products — from 30 weeks to 42 weeks.

"If lead times continue to increase, DOD weapons programs

(Continued on next page)

POTENTIAL NET INCREASES IN AIRCRAFT COSTS (THOUSANDS OF FY05 $)

Aircraft Type	Steel				Aluminum				Titanium			
	Base	10% increase	25% increase	50% increase	Base	10% increase	25% increase	50% increase	Base	10% increase	25% increase	50% increase
C-17												
Base	261				5,818				1,056			
Increase/Unit		26	65	130		582	1,455	2,909		106	264	528
Increase/Buy 2005-2011 (42 aircraft)		1,095	2,737	5,474		24,436	61,091	122,182		4,435	11,089	22,177
F/A-18E/F												
Base	27				302				183			
Increase/Unit		3	7	13		30	75	151		18	46	92
Increase/Buy 2005-2011 (190 aircraft)		511	1,278	2,556		5,735	14,339	28,677		3,483	8,707	17,414
F/A-18G												
Base	28				318				193			
Increase/Unit		3	7	14		32	79	159		19	48	96
Increase/Buy 2005-2011 (90 aircraft)		255	637	1,274		2,860	7,149	14,298		1,736	4,340	8,681
F-22A												
Base	140				521				2,547			
Increase/Unit		14	35	70		52	130	260		255	637	1,274
Increase/Buy 2005-2011 (104 aircraft)		1,461	3,651	7,303		5,414	13,536	27,072		26,491	66,227	132,454
F-35 (CTOL)												
Base	3				238				162			
Increase/Unit		0.3	1	2		24	60	119		16	40	81
Increase/Buy 2005-2011 (79 aircraft)		27	68	135		1,881	4,703	9,405		1,279	3,198	6,395
F-35 (CV/VSTOVL)												
Base	5				245				233			
Increase/Unit		0.5	1	2		24	61	122		23	58	116
Increase/Buy 2005-2011 (111 aircraft)		52	129	259		2,719	6,796	13,593		2,583	6,456	12,913

Sources: OUSD(AT&L)/Defense Systems and Industrial Policy

QUOTABLE:

Aerospace Manufacturing Creates Tons Of Muda — 96% Scrap Rates

"The amount of metals to be procured for the production of an aircraft (Material Buy Weight) is significantly greater than the actual amount of that same metal present in the delivered aircraft (Material Fly Weight).

"For example, contractors must acquire almost 240,000 pounds of titanium to produce a single F-22A — for which the titanium content of the finished components totals less than 10,000 pounds. In other words, 4.2 percent of the total amount of titanium purchased for one F-22A is present in the completed aircraft. The remaining 95.8 percent of the purchased titanium ends up as scrap to be sold for recycling. Overall, scrap rates for these aircraft range from a 'low' of 80 percent (20 percent Fly/Buy ratio) for steel and titanium for the C-17 to a high of 96.2 percent (3.8 percent fly/buy ratio) for aluminum for the F-22A.

"Aircraft designers seek to design components with high strength but with minimal weight. To achieve this, designers often choose metal plates and forgings for structural components. However, forgings and mill suppliers generally ship components in rough finished forms due to limitations in providing near-net shapes. Instead, parts undergo finished machining to gain the proper dimensional tolerances and to meet weight requirements for the airframe. As a result, 80 to 95 percent of the metal may be machined from the rough forging and end up as scrap. Given today's manufacturing processes, scrap of this magnitude is unavoidable. However, DOD and industry initiatives are focusing on the reduction of scrap by using advanced manufacturing techniques to create near-net shape components with wrought properties. Currently, military aircraft prices generally are not adjusted for costs recovered by contractors from the sale of scrap metals. Nevertheless, costs associated with recovered scrap reduce overhead rates which ultimately affect the prices the Department pays for its aircraft...

"The C-17, F/A-18, F-22A and F-35 use specialty metals and aerospace alloys of steel, aluminum and titanium. In December 2005, representative prices for aerospace alloys for these three metals were: steel, $3 per pound; aluminum, $5 per pound; titanium, $55 per pound. In the same period, the estimated scrap prices for these three metals were: steel, $0.14 per pound; aluminum, $0.65 per pound; titanium, $15 per pound."

—From the Deputy Under Secretary of Defense for Industrial Policy's report "China's Impact on Metals Prices in Defense Aerospace," located at http://www.acq.osd.mil/ip/docs/china_impact_metal_study_12-2005.pdf.

India's R&D Brass To Enlighten U.S.

Indian Minister of Science & Technology Kapil Sibal and Surinder Kapur, who chairs the country's National Mission on Manufacturing Innovation, will be among the speakers featured at a June 16 conference on "India's Changing Innovation System" to be hosted in Washington, D.C., by the Board on Science, Technology & Economic Policy (STEP) of the National Academies.

Also on the day's program will be Presidential Science Adviser John Marburger; Ray Orbach, recently confirmed as under secretary of Energy for Science; Under Secretary of Commerce David McCormick, who heads that department's Bureau of Industry and Security; and Under Secretary of State Nicholas Burns.

The objective of the conference, organized in cooperation with the Confederation of Indian Industry, is "to review the policy changes that have led to India's significant technological and industrial progress, to examine existing challenges within the Indian innovation system, and to discuss opportunities and challenges for enhanced cooperation between the U.S. and Indian innovation systems," according to STEP.

To be held at the Old National Academies Building, 2100 C St. NW, the conference will begin at 8:30 a.m. on Friday, June 16, and run all day. A reception and dinner on the agenda beginning at 6 p.m. on the eve of the conference will take place at the same location.

To obtain more information or to register, please email McAlister Clabaugh of STEP at mclabaugh@nas.edu.

China's Impact... (From page eight)

may be forced to start long lead parts procurements earlier than the current span of 12 months prior to start of final assembly," says the Industrial Policy office. "Increasing long lead span times could force the Department to adjust program funding across the Department — reducing weapons system deliveries, stretching-out programs and impacting logistics support."

Any further price increases will drive up the cost of most military aircraft. "If aluminum prices were to increase by 25 percent, the largest unit price increase would be $1.45 million for the C-17 and result in a total increase buy cost of $61 million over 42 aircraft," says the Industrial Policy office. "If steel prices were to increase by 25 percent, the largest unit price increase would be $65,000 for the C-17 and result in a total increase buy cost of $2.7 million over 42 aircraft. Titanium prices increases may be more likely. A 25 percent titanium price increase for the F-22A would increase unit price by $637,000 and the total buy by $66 million over 104 aircraft." A 50 percent increase in the price of titanium would increase the cost of the F-22A program by $132.5 million.

DOD consumes 16 percent of domestic titanium production, but commercial aerospace applications account for 40 percent of domestic titanium consumption. "DOD titanium demand likely will significantly increase over the next seven to 10 years as the F-22A, F-35 and other military aircraft are added to or replace the existing fleet," says the IP office. Higher prices are "retarding" the use of titanium in other

ManTech... (From page 3)

sustainment account (PE 78611F) "to improve readiness through automated tracking of aircraft maintenance and mission records."

The **Defense Logistics Agency's research and technology demonstrations budget** (PE 63712S) would see a boost of $3 million from the budget request of $23.4 million for a program aimed at creating a "comprehensive and integrated strategy [and plan] for the appropriate use and acquisition of hydrogen fuel." An additional $8 million would be used to research and demonstrate solid hydrogen storage systems (PE 63712S); and $7 million for the acceleration of the deployment of fuel cell technologies in military vehicles. DLA would receive an additional $3 million to support the manufacturing supply chain and for increasing involvement of small- and medium-sized firms in meeting defense surge production requirements; $7 million for the embedded passives test bed program; $4.2 million for aging systems sustainment and enabling technologies; and $1.7 million for the development of an emergency power source to meet National Guard requirements (all under PE 63712S).

The Senate also provides a $3 million increase in the **DLA ManTech program** (PE 78011S), up from the $18.7 million requested. This money would be used to improve the castings readiness program "aimed at bringing castings expertise into defense supply centers; reducing backorder times for critical cast and forged parts; developing new manufacturing processes for the defense industrial base, and establishing a data exchange system to coordinate castings information and ensure timely parts availability."

Finally, the Senate believes a new era in reducing the cost and risk of weapons systems will require the widespread use of Manufacturing Readiness Levels and Interoperability Readiness Levels. "The committee directs the Department to report to the congressional defense committees no later than March 1, 2007, on the feasibility of incorporating MRL's and IRL's into DOD Instruction 5000.2 as explicit criteria for milestone decisions," says the report language accompanying the authorization bill.

Diesel Vehicle Growth Ready To Roll

Global demand for light vehicles that run on diesel fuel should nearly double over the next 10 years, increasing from 15 million units in 2005 to 29 million in 2015, according to J.D. Power Automotive Forecasting. World market share for diesels will reach 26 percent by 2015, up from 18 percent last year.

"As a proven, cost-effective and off-the-shelf solution, diesel has a head start over other emerging fuel-efficient technologies," says Alastair Bedwell, senior manager for J.D. Power's forecasting unit. "The United States and Canada are markets with enormous potential for diesel light-vehicle sales."

Diesel's share of the U.S. light vehicle market was only 3.2 percent in 2005, but that should increase to more than 10 percent by 2015. Growth in demand in Western Europe should peak at below 60 percent for new vehicle sales.

"However, growth in demand in Eastern Europe is expected to eclipse that of Western Europe during the forecast period," says the J.D. Power forecast. Volkswagen is expected to maintain its leadership in the global market, followed by Ford. Toyota is projected to be the fastest growing producer of diesel cars.

Securities Industry Drives Economy

The U.S. securities industry, which includes finance, insurance, real estate, rental and leasing, is an economic "powerhouse that continues to strengthen the U.S. economy," says Marc Lackritz, president of the Securities Industry Association. This industry contributed 24 percent to the nation's GDP in 2005, making it the leading contributor to GDP for the past three consecutive years.

The market last year for finance and insurance experienced "explosive" growth of 6.7 percent, up from 1 percent in 2004. Real estate, rental and leasing slowed to 2.5 percent, down from 5.6 percent in 2004. Last year, the securities industry raised $3.2 trillion in capital for American businesses and nearly $14 trillion over the past five years.

'ExtraNets' Not Great For Business

Companies are relying more on "extranet" Web sites to conduct electronic commerce, but the trend "is resulting in additional supplier costs for the supply chain," according to the Computing Technology Industry Association (CompTIA). A survey of business-to-business e-commerce buyers and suppliers found that 74 percent of responding companies are using Web sites today for a portion of their B2B trading. Thirty-one percent indicate Web site trading has increased over the past year.

"In some instances, however, the shift to extranet Web sites is having a negative impact for both the supplier and customer in areas such as efficiency, accuracy, cost and partner relationships," says CompTIA. The majority of companies (92 percent) surveyed said their preferred mechanism for B2B trading is system-to-system electronic trading. The survey on trends in B2B trading is available at http://eidx.comptia.org/.

Sematech Opens Training Partnership

Sematech, the chip research consortium, has entered into a partnership with the Austin Community College to launch a $4-million program to train technicians and engineers in nanoelectronics. The Nanoelectronic Workforce Development Initiative will initially train 160 two-year technical undergraduate and graduate students. Other partners include the Texas State Technical College in Waco and the University of Texas at Austin.