Before the U.S.-China Economic and Security Review Commission

Prepared Statement of John F. Walsh President, Walsh Aviation Hearing on the Impact of U.S.-China Trade and Investment on Pacific Northwest Industries – Panel II: Aviation and Aerospace January 13, 2005

I would like to extend my thanks to the commission for inviting me to make a statement on my analysis and thoughts on the aviation and aerospace sectors and their inter-relationships with China and the Pacific Northwest Region of the United States.

Walsh Aviation is an Annapolis, Maryland based consulting service. I have been operating as an independent consultant for the last 10 years with a client base of 55 companies to date. My clients are predominately in the aircraft component manufacturing and material supply sector. I also provide Consulting Services to the Department of Trade and Industry (DTI) in London, and Industry Canada in Ottawa.

Prior to starting my consulting company I served as Director of Market Planning and Forecasting for Rohr Industries (now a part of the Goodrich Corporation). Rohr was the major manufacturer and supplier of nacelles (or engine pods) and thrust reverser systems for Boeing, McDonnell, and Airbus commercial jet transport aircraft. During my 20 years at Rohr (1974 – 1994) I got to witness, on a first hand basis, the struggles and battles of the aircraft manufacturers as they worked their way through the ups and downs of the aerospace marketplace.

In a nutshell, I have been watching the prime aircraft manufacturers in the commercial transport aircraft market sector slug it out with each other for more than 30 years.

Commercial Transport Aircraft Manufacturing is a Cyclical Market

I may be stating the obvious by bringing your attention to the cyclical nature of the commercial transport aircraft market but it is a prerequisite to understanding the nature of the market. Depending on what part of the aviation cycle you are in the airlines and the aircraft manufacturers often behave in very different and divergent patterns.

Earlier Aerospace cycles

All of the aerospace cycles in the past have been a bit different. Just when you think you have learned something from the last one the next one comes along and doesn't behave in the same manner. Production rates are rising and falling at rapid rates but the drivers for the up and down movements can be very different.

In the aircraft production cycle which started back in 1984 (252 aircraft delivered) and lasted through 1992 (603 aircraft delivered) there were large gains in airline passenger traffic driving the market. The worlds' airlines were fiercely competing amongst each other to capture this growing market. The airlines were literally beating Boeing, McDonnell Douglas, and Airbus over their heads to increase aircraft production rates. This was a somewhat classic demand driven cycle with airlines overestimating their aircraft needs. This oversupply of aircraft, particularly with the U.S. airlines, coupled with the first U.S. invasion of Iraq in 1991 led to the significant 50% decline in aircraft deliveries from 1992 (603 aircraft delivered) through 1995 (330 aircraft delivered).

The next upside segment of the cycle which started in 1995 was very different. It was not the classic airline demand driven cycle. Boeing, looking at the lay of the land in 1994, sensed that the airlines were past most of their major problems and that conditions would soon be ripe for selling new aircraft. The plan, as I interpreted it from market events, was for Boeing to crank up

production rates at a very rapid pace and essentially "flood" the market with aircraft deliveries. Airbus was still a relatively small producer at that time with its 124 aircraft production level in 1995. Boeing would have the advantage of being able to offer early deliveries to the airlines at attractive prices (because of perceived efficiencies of high rate production) and its competition could not respond in a timely manner. In my opinion. It was a manufacturer led "supply push" by Boeing that was the major market driver in the upside of the cycle from 1995 to 1999. The airlines later jumped on it but it was Boeing that was leading the drive to increase production.

A great plan, but it did not work. The rate increase was so large and so fast (18 aircraft per month to 43 aircraft per month in 18 months) that Boeing and a number of its major suppliers could not execute it without significant disruptions and cost overruns. In November 1997 Boeing was forced to suspend production on the 747 line for 20 days and curtail the introduction of new aircraft into the 737 line for a 25 day period. The production line shutdowns were the first in company history.

The "plan" did not, however, stop Airbus from increasing its production rate from the 124 aircraft level in 1994 to 294 aircraft in 1999. Airbus essentially met the Boeing rate increases with their own production increases, spooling the total market up to a peak of 867 aircraft in 1999. The down side of the cycle extended to 2004 with a drop in total production levels back down to the 605 aircraft level.

Where are we Today?

Most of the reasons for the down side of this cycle were readily visible. The terrorist events of September 11, 2001 and the subsequent fall off in the demand for air travel were the more obvious major drivers for the market decline. A more in depth analysis indicates that a number of airlines were already experiencing problems with declining air fares and having too much aircraft capacity on hand from the Boeing led "supply push" by the end of the year 2000.

On the demand side of things we are now seeing the long awaited rebound in airline traffic. Preliminary world traffic growth (in revenue passenger miles) data indicates that total scheduled airline passenger traffic grew at a 14% annual rate in 2004. This follows annual world passenger traffic declines of 2.9% in 2001, 0.5% in 2002 and 0.9% in 2003. We are now, for the first time after three years, above pre 9/11 world traffic levels. World freight traffic showed a similar rebound with preliminary estimates of 13% growth in revenue ton miles in 2004. The Asian airlines, and particularly China's airlines, are leading the pack in terms of traffic growth in 2004. In 2003 there were significant traffic declines in China as the result of the SARS epidemic that surfaced throughout the region during the 2003 time period.

The world airline profit picture is also improving. Major annual operating losses of $11.8B were reported in 2001 with operating losses of $4.9B reported in 2002 and $0.9B in 2003. The "best guess" estimate is for something close to breakeven world airline operating profits for 2004. There are not a lot of airlines that are actually reporting meaningful profits at this point in the cycle, but it is clearly getting better. Increased fuel prices have curtailed what could have been a return to operating profits in 2004 on a world wide basis. It would be prudent for the world's airlines to take a little more time to rebuild their balance sheets and getting back to higher utilization rates for their existing aircraft fleet before ordering more aircraft. Unfortunately, the airlines have shown that they are historically not a "prudent" group of buyers.

In this current cycle, Boeing reached its peak production rates in 1999 with delivery of 573 aircraft and appears to have bottomed out in the 2003 / 2004 time period with deliveries of 285 commercial jet transport aircraft in 2004. That's a 50% decline (peak to trough) in unit deliveries for Boeing.

The picture at Airbus is quite a bit different. Airbus's production rate in 1999 (Boeing's peak year) was 294 aircraft and continued to increase somewhat to a peak of 325 aircraft in 2001 and then

bottomed out in the 2002 / 2003 time frame at 303 and 305 aircraft respectively. Airbus ended the year 2004 with 320 aircraft deliveries. Airbus in the current aircraft cycle was able to achieve flat deliveries as compared to Boeing's 50% decline in the same time period.

Today's Winners

If you look at the numbers for the last three years Airbus wins on aircraft orders, aircraft deliveries, and aircraft backlog. It is important to note it's not exactly a rout. Boeing still maintains a market share that is in the 47% to 48% on orders / deliveries or 43% or so on backlog depending on how you decide to measure it. It is clear that Boeing is no longer number one or the "world's largest commercial aircraft manufacturer". Unfortunately, for Boeing, being "very close" to being the world's largest supplier does not seem to matter to the media when it comes to publication time.

Airbus has made impressive gains in the market with its products over the last five years. It has cost Boeing something in the order of at least 20 points in market share. Airbus has clearly out-ordered and out-delivered Boeing at the bottom of the aircraft cycle. What are the reasons for the impressive gains? In my opinion, the aircraft products offered by both companies are generally regarded to be about equal. Recent airline sales campaigns are now suggesting that Airbus has become even more aggressive on aircraft pricing. Boeing at the same time is reported to have backed off in reducing their prices to the newly established threshold levels of what it now takes to sell airplanes.

As aircraft price becomes the dominant sales discriminator then the aircraft cost line gets to receive even more of a corporate focus for both companies. The pressures to outsource will become a compelling strategy to implement a quick fix for quick results to a long term problem.

Where do we go from here?

Boeing has stated its plan to deliver approximately 320 aircraft in 2005. The Airbus publicly announced plan is to deliver 350 to 360 aircraft in 2005. When it comes to delivery plans in 2006 both manufacturers become a bit circumspect as to what their plans are.

Let's move to the market drivers for the emerging upside of this current cycle. In my opinion, it will be another manufacturer led "supply push" that is the major market driver for the next wave of oncoming increases in production. The big difference is that this time around it will not be led by Boeing. It will be led by Airbus. Boeing, in my opinion, will be forced to react and follow with its own increased production rates but for this cycle it is Airbus leading the parade.

Most independent forecasters believe that aircraft production levels will be up in 2005 and 2006. The point where I diverge from most of the aircraft forecasters in the industry is in the rate of the production buildup. I believe production rates will be going up at a rather rapid rate starting from the base of 605 aircraft in 2004 accelerating through 2005 and reaching 800 aircraft per year in 2006 (Boeing with 350 aircraft and Airbus with 450 aircraft). If I am right with my forecast, that would take Boeing from 285 aircraft deliveries in 2004 to 350 aircraft deliveries in 2006, a 23% increase in the two year period. Airbus would move from 320 aircraft deliveries in 2004 to 450 aircraft deliveries in 2006, a 40% increase in the two year period. If anything, these numbers could be larger and the pace could be faster than most would expect, particularly with regard to my projections for Boeing production rate increases.

As we start calendar year 2005 Boeing is currently at production rates of 1 aircraft per month for the 717, 17 aircraft per month for the 737, 1 aircraft per month for the 747, 1 aircraft per month for the 767, and 3 aircraft per month for the 777. The 757 program is currently being phased out of production with the last 757 delivery to take place in June of 2005. Continued production of the 767 is viewed as being highly dependent on the startup of the highly publicized U.S. Air Force Tanker program. The recently launched 7E7 program which is intended to be a 757 / 767

replacement aircraft is scheduled to begin deliveries in 2008.

Looking ahead, for Boeing it appears that 2005 / 2006 production will be dominated by the 737 (an Renton program) and the 777 (an Everett program) until the 7E7 (an Everett program) starts deliveries in 2008. The 7E7 development, tooling, and production startup will add significantly to the activity levels at the Everett operation during 2006 and 2007.

If you adopt my 800 aircraft forecast for 2006 with Boeing getting 350 and Airbus 450 then it's a 44% / 56% (Boeing / Airbus) market share split which would point to further declines for Boeing's market share over the next two years.

As we start calendar year 2005 Airbus is currently at production rates of approximately 20 aircraft per month for the A320 and approximately 7 aircraft per month for the A330 / A340. The A300 / A310 programs are at a modest 1 or less per month combined production rate and the newly launched A380 is currently scheduled for first delivery in July / August of 2006. The recently announced A350 program, a derivative of the existing A330 / A340 programs is being designed to combat the Boeing 7E7 program and is scheduled for first delivery in 2010.

So where does this all leave us? I think it points to a market that is headed up and headed up sharply. Maybe it should not – but I believe it will. Airbus is pushing it on the supply side and the Chinese airlines are pulling it from the demand side. Boeing will react to it. The rest of the airlines and the industry will join in on the premise that "the train is leaving the station, so get on board or you will be left behind". This is one cycle that Boeing cannot afford to miss. This is also an excellent time for Airbus to make major inroads into the Chinese market by locking in significant orders for aircraft and Airbus knows it.

What happens at the top or on the upside of this current cycle? It appears to me to be a market that might be Airbus's market to lose. The biggest threat to Airbus, in my opinion, would come from a failure to accomplish the 50% increase in production by 2006 that I have projected.

The aggregate market in terms of supply and demand forces will of course, over time, correct itself but I think that it is likely to be a post 2006 /2007 event.

What about the Next Cycle?

Things could be a bit different post 7E7 introduction (2008 and beyond). In my opinion, if Boeing delivers the 7E7 as advertised it could become a major paradigm shift in the market for commercial transport aircraft.

An aircraft with an all composite fuselage, composite wing, emphasis on electric actuation and control versus hydraulics, etc. could be real show stopper with the airlines. There should be significant weight savings as well as maintenance savings with this design concept that would save the airlines a lot of money during the operational life of the aircraft. Offering the 7E7 at current 767 prices is a "gutsy" move by Boeing.

The Airbus A380 is a major accomplishment for Airbus. It is big in terms of physical size (it will be the world's largest). It will, in my opinion, sell reasonably well for an aircraft of that size. The A350 response by Airbus to the 7E7 is an aggressive move. It is a derivative aircraft of the A330 / A340 family but one with major changes. Airbus is committed to design and build an all new wing for the A350 as well as add a host of other improvements (including 7E7 engines). To their credit, Airbus made their decision on launching the A350 in a heartbeat. Boeing on the other hand, in reacting to the A380, agonized over this and that 747 derivative over a protracted period of time and eventually let the A380 come to market without any really competitive response (a major blunder in my opinion). The A380 and A350 will have significant composite material content in control surfaces and other major components but will still be regarded as an "aluminum" aircraft".

The 7E7 program is not without risk. It is a very bold and a substantial competitive move by Boeing. If the 7E7 wins airline acceptance, Boeing can be expected to introduce the technology gains from the 7E7 to a new series of narrow body aircraft to replace the current 737 program (introduction in the 2010 - 2012 time frame?). In my opinion, Airbus will be forced to follow suit and take the all composite aircraft route.

In my opinion the 7E7 program followed by a new all composite series of Boeing narrow bodies could have a much larger impact on the airlines versus the Airbus A380 and A350 programs. It may be "the industry event" that allows Boeing to regain some of its market share? Time will tell. In any event it will be a few years off. Airbus appears to have the upper hand, in my opinion, in the pre 7E7 introduction time frame (2005 – 2008).

Strategic Directions

The Airbus Strategy

I believe you can capture the essence of Airbus's commercial aircraft strategic direction in two words- "Beat Boeing". "Beat" is not at the corporate level (at least for now) or expressed in terms of profitability. It is at the commercial market sector level. It is in numbers of aircraft. It is in annual orders for aircraft, or in annual deliveries of aircraft, or in backlog in terms of number of aircraft. It's a game of who will have the words "world's largest commercial aircraft manufacturer" used in their media bylines and who gets to be referred to as the "world's second largest commercial aircraft manufacturer".

The Boeing Strategy

I believe you can also capture the essence of Boeing's commercial aircraft strategic direction in two words - "Contain Airbus". In my observations of Boeing's past behavior in the marketplace, it used to be "Stop Airbus" and prior to that it was "Ignore Airbus". It was the "Ignore Airbus" strategy that in retrospect allowed Airbus to get that all important foothold in the industry in the early 1970s.

China's Impact on Boeing

China's impact on Boeing needs to be addressed from three different perspectives: China's airlines as a source of future aircraft sales, China's aerospace subcontracting capability as an outsourcing vehicle, China's potential as a future competitor as a prime manufacturer of commercial transport aircraft.

China's Airlines as a Source of Future Aircraft Sales

Boeing historically has done well in selling aircraft in China and throughout most of Asia. "Relationship building" has been discussed as one of the key elements of Boeing's past success story in Asia. Boeing has a very strong position within Japan in terms of selling aircraft and in using Japanese subcontractors to build components and subassemblies for Boeing aircraft.

Airbus has publicly stated that they have targeted China to be "their Japan". The A380 has in the neighborhood of 3% Japanese material and manufacturing content. To date, the A380 has not made any sales inroads at the Japanese airlines. It's not from lack of trying on Airbus's part. Airbus is currently offering Chinese subcontractors up to a 5% risk sharing interest in the newly launched A350 program.

The long term traffic growth rates for China are impressive. Most forecasts indicate a level of 8% to 9% per year over the next twenty years. The U.S. markets are viewed as mature and with a growth rate of a nominal 3% per year tend to not make much of a media splash. The point that is being missed is the large difference in the fleet base from which the growth rate starts

compounding. China's airlines have a fleet of some 600 hundred or so Boeing and Airbus aircraft and another 100 or so Russian built aircraft. The base fleet of Boeing and Airbus aircraft housed within the U.S. Airline system amounts to 5,200 aircraft.

Aircraft orders from Chinese airlines have a number of controlling influences that can impact the conversion of an "announced" order to a firm order and from a firm order to a delivered aircraft. The Civil Aviation Administration of China (CAAC) and other central government commissions still control who flies where, who gets the new aircraft ordered, and what types of aircraft the airline can operate. Safety concerns associated with too many new aircraft being introduced into the China airline system in any one year has been an issue. The Chinese Government has also been adamant about having Chinese flight crews fly their aircraft. Flights to and from Taiwan and the Chinese mainland also get to be a bit of a political hot potato and receive high levels of government intervention in the airline planning and aircraft ordering process.

Historically Boeing is perceived to have an edge in receiving orders from China's airlines due to the need for China to show concern for the large U.S. / China trade imbalances that currently exist. Commercial transport aircraft orders are big dollars. They tend to make big headlines. The EC continues to grow in size and has recently surpassed the U.S. in terms of GDP. The U.S. "edge" may get a bit blunted over time as China's trade imbalances also begin to grow with the European Community countries.

So the bottom line message is China's airlines are very important to Boeing but they are not by any means the "entire" market. The Civil Aviation Administration of China (CAAC) has stated that they believe that China's fleet will grow from its current 700 aircraft fleet level to 1200 aircraft by 2010 (an increase of 100 aircraft per year in fleet size).

China's Aerospace Subcontracting Capability as an Outsourcing Vehicle

Chinese aircraft subcontractors are not yet in the same category as their Japanese counterparts who are highly sought after for their ability to provide close tolerance assembly work and provide high levels of labor productivity.

Most of the Chinese manufacturing resources reside in the China Aviation Industry Corporation commonly known as AVIC. It is a state run organization with a large number of employees. The Chinese government recently split it into two companies AVIC I and AVIC II to makes it less unwieldy. The two resulting pieces still seem to be a bit too large and both AVIC groups appear to lack a clear direction or focus.

It may well be a requirement for Boeing to place additional subcontract work in China to sell aircraft to Chinese airlines and not necessarily as an added source of lower cost production.

China's Potential as a Future Competitor in the Role of a Prime Manufacturer of Commercial Transport Aircraft

The Chinese are currently working out how to design and develop business jets and how to assemble regional jets. The Russians are engaged in somewhat similar efforts.

The raw talent and raw resources are there but it needs to be organized and managed into something that would earn the respect of the world's airlines. In my opinion, both of these countries will be absorbed in exploring these two less complex market sectors for some time to come. That is a good thing for Boeing and Airbus.

What Does this All Look Like 10 Years from Now?

Ten years is a little difficult to predict in this market with any degree of accuracy but the next 5 years does look like it could be a bit rough for Boeing, the Pacific Northwest, and the United

States in terms of the production of commercial transport aircraft.

The world press and media coverage of the A380 introduction with its targeted first airline delivery in July / August of 2006 will paint a rather impressive European victory message in the 2005 / 2006 / 2007 time frame. It may have an impact on the airlines' decision making process during the next few years.

The good news is that, in my opinion, Boeing production rates are going to start to move up. I guess the bad news is that they should be going up even faster than Airbus, but let's focus on the good news part of the message which will affect the near term outlook.

Boeing's aircraft product lines are very much a U.S. product. Boeing lists the U.S. share of its total aircraft (less engines) as 86% for the 737 aircraft and 76% for the 777 aircraft. These work share numbers are always subject to some interpretation as companies listed as U.S. suppliers often subcontract work to non U.S. companies and the companies listed as non-U.S. suppliers subcontract to U.S. companies, particularly material suppliers.

If I am right with my 350 aircraft number for Boeing in 2006 that is a 23% increase over 2004. The 737 program has a relatively high amount of component and subassembly activity in Wichita Kansas so the Pacific Northwest region might receive less of a bounce than the gross production rate increase would suggest.

My ten year crystal ball "vision" of the future says that by 2015 Boeing will have regained its market share position to the level that Airbus and Boeing are trading off "who has the 45% share and who has the 55% number" as the market share battle ebbs back and forth between the two companies.

I predict that in ten years both Boeing and Airbus will still be "hip deep" in the commercial transport aircraft market and will still not particularly like each other. Upward movement of the regional jet suppliers Bombardier and Embraer may have also split the market up a bit in terms of who is serving the shorter range market needs of the airlines. The threat of market entry by Russia and / or China with their own indigenous aircraft will be more of an issue to deal with at that time.