Good Morning. I'd like to extend warm greetings to all my fellow titanium industry colleagues and other guests. I'm excited to be participating in this conference once again, and honored to be part of such a distinguished panel. For those of you who know me, you know that my passion for golf is only exceeded by my passion for titanium. Today I am going to talk about the titanium scrap market. First I’d like to offer a little background, than I’d like to concentrate on where the markets been in recent years and where I see it heading in the future. My perspective comes from more than thirty years of experience with Goldman Titanium one of worlds leading titanium scrap processors.

I have lived through the volatility and extreme cycles that have historically characterized our business. Today the titanium industry is thriving but it’s not all that long ago that it was in its infancy. When I started in the business, the average person had never even heard of titanium. As I prepared for this presentation it really hit me how truly far we’ve come in a relatively short period of time. Today titanium is part of our every day life. At work or play, at home or on the road, we are surrounded by products made with titanium. We trek up the hill in our titanium bike, tee off with the latest titanium driver, and take off in jets built with increasing amounts of titanium. Yes titanium has evolved and become mainstream. But despite its widespread popularity, it hasn’t lost its allure. The best evidence of this is that we pay for all these products with our prestigious titanium credit cards. I’m thrilled to say that the best is yet to come. The titanium industry is strategically well positioned to capitalize on the global economic boom the benefits of which are just starting to unfold.

For those of you who may not be familiar with Goldman Titanium, I would like to take this opportunity, to better acquaint you with our company. You might say we've been around since the beginning of titanium, since Goldman was founded in 1955, just a few years after commercially produced titanium metal first became available. We're located in Buffalo, New York, that snowy city not too far from Niagara Falls. As vice president, I manage the company along with my partner, the president of the company, Gary Greenfield, who has been in the industry even longer than I have.

Over the years, Goldman has expanded from recycling titanium in the steel mills to recycling weldables and feedstock for the prime titanium industry. In 1988, we added the recycling of turnings for the prime titanium industry. In 1999, we achieved ISO 9001 AS 9100B approval for aerospace applications.
At Goldman, we employ a variety of methods for processing a wide range of solids and turnings, preparing aerospace-quality material for both rotating and non-rotating applications. We prepare bulk weldables, feedstock, and cobbles. We fully process turnings in loose form for electron beam furnace melting, and briquette form for plasma furnace melting. Our quality controls ensure that our products adhere to the strictest customer standards. Offering a wide range of titanium scrap products, and operating internationally, we pride ourselves on being recognized as one of the world’s premier titanium scrap processors.

Now, moving on I’d like to describe the market conditions that set the stage for the recent crash in titanium scrap prices that caught so many of us in the industry by surprise. Starting off the year at historical highs, that scrap prices fell, was not at all surprising, what was surprising was how fast and far they fell.

In 2004 titanium scrap prices began to climb steadily, in 2005 they skyrocketed, and in 2006 they soared to historical highs. Prices remained high in the beginning of 2007, than suddenly, scrap prices began to plummet. They continued to steadily decline throughout the year retreating back to prices not seen since the beginning of 2005. Even though this sudden drop in prices took so many of us by surprise, it’s possible when looking back to trace the factors that came together to create this dramatic shift in the market. Several of the factors that contributed to the rise in prices actually helped set the stage for its subsequent decline. So in order to fully understand why the market collapsed, I’ll first review why it skyrocketed from 2004 to early 2007.

But before we get there, I would like to spend a minute or two on the condition of the market before it started to rebound in 2004. Before 2004, there was a several year stretch when the titanium industry was in the doldrums primarily because the aerospace industry was in a slump. Although the terrorist attacks on 9/11 sent aerospace into a tailspin, the financial woes of the airline carriers were already being felt. Coinciding with the normal slowdown of scrap generation that you would expect during a downturn, there was also a major reduction in obsolete scrap coming out of Russia. This left the market with an extremely tight supply of scrap. Also, consistent with the slowdown, the generation and supply of sponge was limited. Even in good times, sponge producers were reluctant to add capacity, due to the highly cyclical nature of the business. The availability of lower-cost DLA sponge during this period only increased their reluctance. When the demand from the ferrotitanium and stainless steel producers quickly picked up, in the second half of 2003, they consumed the available supply of scrap.

Now we start 2004 and the market begins to rebound. Demand started to rise when the requirements from the ferrotitanium and stainless steel producers as well as the specialty industries picked up. When the demand from the ingot manufacturers picked up, in the second half of 2004, they found themselves
competing with the ferro-ti producers for the limited supply of scrap on the market and availability deteriorated. In 2005 the ferroti market was on fire, and producers were desperate for material. Titanium scrap represents a very small part of the cost of steel, so steel producers are not as cost sensitive as the titanium melters. As a result more metal units went to the steel producers, leaving the supply for the titanium melters severely curtailed. With the DLA sponge fully depleted and convinced that the aerospace recovery was sustainable, the titanium producers began to ramp up their sponge and melt capacity to meet the projected increase in demand. While sponge and scrap remained in tight supply, demand from the other sectors of the titanium industry was improving.

As we start off 2006, the titanium industry is hitting on all cylinders. Demand from all sectors in the industry is strong. Aerospace is still flying high, and the build out of China's infrastructure is only adding to the frenzy. Although the melters and forgers are operating at full capacity, and there is more scrap being generated, the supply is still limited due to the normal lag time in scrap generation. Although there was an increase in sponge production during this period as a result of the worldwide expansion projects coming on stream, the additional supply was inadequate to meet what many in the industry referred to as an insatiable demand. Producers, service centers and end users trying to avoid higher prices began to stockpile inventory. Back-orders for mill products rose to new highs. With raw material supply still limited and the demand for titanium product insatiable, the cost of scrap soared to historical highs, even eclipsing the cost of sponge for the titanium melters.

Many people in the industry projected that the trends seen in 2006 would continue through 2007. Which they did, at least in the beginning of the year. Then, several factors came together or maybe I should say collided and the demand for scrap suddenly began to drop and continued to spiral downward for the rest of the year. The sudden and dramatic drop in the demand for scrap surprised many of us but in retrospect we were flying into the perfect storm, we just did not see it coming. Here are some reasons why.

One factor was the start of the so-called closed loop arrangements. Airplane and engine manufacturers and forgers implemented these arrangements to help stabilize raw material costs. Instead of selling their scrap on the open market they would assign it to the mills for toll processing. In exchange for the scrap the mills gave the manufacturers credit towards future purchases of mill products. Besides the cost savings, these arrangements also assured the manufacturers a steady supply of product. However, they also resulted in reduced demand for purchased scrap.

As scrap availability continued to plummet the ingot manufacturers also took steps to use their own scrap more efficiently. They instituted recovery programs.
to better segregate and handle their scrap. While some did the processing in house others outsourced it. It is easy to see how the growing impact of these solutions softened the demand for purchased scrap.

A slowing demand from ferro-ti producers also contributed to the steady slide downward. There were two reasons for this. First, steel mill business in general was off and second, instead of using only 70/30 ferro-titanium, the steel mills began to also use a new product, a 35% grade. The new 35% grade alternative was not made with scrap while the 70/30 grade they traditionally used was. The 35% grade, at a quarter of the price of 70/30 competed well with the 70/30 grade and caused a drop off in the demand for scrap.

The production delays of the Airbus A-380 due to technical problems also slowed the demand for titanium. Mill products that had been ordered for the planes at the producers or subcontractors had to be pushed out or delayed. This caused a pause in the demand for titanium and in turn for scrap. Boeing's 787 delays in ramping up production also slowed demand.

Now, in addition to the declines in demand I just discussed, suddenly there was a greater supply of scrap on the market as well. Why?

One reason was the dramatic ramp up in production during 2005 and 2006. With the higher production levels there was a greater amount of scrap being generated and lag times were also shorter.

Another reason, more sponge became available, as planned sponge expansion programs either came on stream or became fully operational. Lower cost Chinese sponge also hit the market. As the supply of sponge increased the need for scrap continued to plummet.

The collapse in scrap demand we witnessed this year will go down in titanium history, and like the stock market crash of 29, the scrap crash of 07, will be talked about for years to come.

So where do we go from here. I think the market will stay around where it's at for the rest of the year. Although it's possible we might see a modest slowdown in demand. One reason might be, the melters, ferro-ti and super alloy producers instead of buying a few months out are typically buying on an as needed basis now. Another reason, involves how much additional sponge actually comes on the market as a result of the expansion projects becoming fully operational.

In the first half of 2008, I think the market will stabilize. In the second half of 2008 there may be modest market adjustments, both in terms of demand and availability. Strong demand for titanium product is projected to continue and
additional pick up is possible if the ferro-ti and stainless market rebounds. Increases in demand may also come as inventory at the service centers are worked down. However, the additional supply of sponge coming on the market and competing with scrap could offset the demand pressures.

So, looking beyond 2008 what do I see? I have lots of golf balls, even a couple of titanium balls, unfortunately I don’t have a crystal ball. But here are my predictions. Actually, I see friendlier skies ahead. Which in reality probably has more to do with what I don’t see and what I don’t see is the scrap industry being as highly volatile and cyclical as it has been in the past. Why not what’s different now? A few things:

First, It’s all about demand, it always has been and always will be. And the demand for titanium has never looked better. I believe aerospace will continue as it always has to dominate the titanium industry, and as a result dominate the demand for scrap as well. But unlike in past cycles when aerospace demand was volatile, the long term outlook for aerospace demand should remain strong for many years to come. Besides the ongoing need to replace aging fleets, the world fleet of passenger aircraft is forecasted to double by 2025, with the demand from Asia especially China and India exceptionally strong. Also, the demand for titanium has been fundamentally changed as a result of the newer larger aircraft, the A380 and the Boeing 787 Dreamliner requiring substantially greater proportions of titanium. Couple the booming aerospace demand with robust demand predicted from the other industry sectors, particularly emerging markets and industrial and the demand for titanium scrap looks bright for the foreseeable future.

Second, I believe there will be greater equilibrium between the demand and supply forces than there ever has been before. This time, the manufacturers and producers armed with record profits and convinced about the long term growth trends in the market, have expanded their sponge, melt and forging capacities to meet this unprecedented demand. So it is highly unlikely that we will see the extreme shortages and excesses we experienced in the past.

Another factor that should contribute to greater equilibrium in the market is the closed loop arrangements, and the internal recovery programs, which in addition to providing cost savings also help ensure a stable supply of product.

I also do not see the kind of volatility that has long characterized the scrap industry. Why not? What’s different this time?

First it’s what I just talked about, when there is greater equilibrium between demand and supply prices tend to be more stable.
Second the scrap industry as we knew it has been fundamentally altered in a structural sense. The adaptations the industry implemented to mitigate the recent extreme volatility in the market, the closed loop and recovery programs are not going away. These programs are here to stay and will add a more stable scrap supply to a growing sponge supply, benefiting the entire industry.

Also, extraordinary events that dramatically impacted the scrap market in prior years such as the Russian sponge that once flooded the market and the DLA stockpile that was sold off are no longer relevant.

So, there you have it, in a nutshell, it is highly unlikely that we will see a return to the recent extreme volatility in the scrap market any time soon. However, we should enjoy strong ongoing demand, and a more stable supply helping both processors and melters. Now I am not saying you won’t have to buckle your seat belt, I’m sure we will hit plenty of bumps along the way, but I believe the worst of the turbulence is behind us. We have settled in at a comfortable altitude, there are a few clouds on the horizon, but visibility is good, we should have a pretty nice ride from here.

I would like to thank the ITA for giving me the opportunity to speak with you today; it has truly been an honor and thank you for your time.
Titanium in our everyday lives
1955
Goldman Titanium is established.
Began recycling Titanium into Steel mills

1972
Began recycling bulk weldables into the prime titanium industry

1975
Began recycling feedstock into the prime titanium industry and superalloy industries

1988
Began recycling turnings into the prime titanium industry for aerospace applications

1999
ISO 9001 and AS91100-B certifications approved
Products

Solids
- Bulk Weldables
- Feedstock
- Cobbles

Turnings

Briquettes

Consumers
- Prime Titanium
- Steel Mill
- Stainless Steel
- Ni Alloy
- Al Master Alloy
- Ferro Titanium Producers
From 2000 Until Early 2004

- Titanium industry in doldrums
- Aerospace demand already down, and compounded by 9/11
- Limited supply of raw materials available
- DLA sells off stockpile of obsolete sponge
- Sponge makers reluctant to add capacity
  - some curtail
Late 2004 to 2005

- Increased demand from ferro titanium, stainless steel and specialty industries
- Titanium prices began steady increase
- Ferro-ti market on fire and ingot makers also recovering due to pickup in aerospace industry
- Titanium producers start to increase sponge and melt capacity
- Continued short supply of sponge and scrap drives prices higher
MARKET FLYING HIGH

2006

World wide sponge expansion comes on stream

Supply still limited, although melters and forgers operating at full capacity

Backorders at mills at all time high

Aerospace industry is booming

Build out of China’s infrastructure fueling demand

Producers, service centers, and end users start stockpiling

Demand across all industry sectors is STRONG

Scrap prices rise to record levels, even eclipsing price of sponge

Insatiable demand for raw materials
Titanium’s Perfect Storm
the Crash of ‘07

- Closed loop arrangements begin to impact demand
- Manufacturers institute more efficient recovery programs
- Ferro-ti producers seeing less demand
- Steel mills start using 35% grade product
- Airbus A380 delays
- Due to the 2005-2006 ramp up in production, the supply of raw material increases
- Lower priced Chinese sponge hits market
End of 2007

- For the remainder of 2007, prices should stabilize with possibility of modest decline as producers buy on as needed basis

First Half of 2008

- Stabilization of the scrap market in first half of 2008

Second Half of 2008

- In the second half of 2008, prices may pick up if demand from ferro-ti and stainless rebounds, or if inventories at service centers are worked down

- OR

- There also could be a price decline, depending on additional raw material coming into market from expansion projects
Increased Demand
- Aerospace demand predicted strong for foreseeable future
- Robust demand from other industry sectors, especially emerging and industrial

Reliable Supply
- Worldwide manufacturers and producers have expanded their sponge, melt and forging capacities
- Closed loop arrangements ensure stable supply

Stabilization of the Market
- Greater equilibrium between supply and demand
- Fundamental scrap industry improvements that happened during the boom are now in place
- DLA stockpile sold off
Strong ongoing demand and more stable prices going forward.
Thank you for your time and attention!

If you have any questions or would like a copy of this presentation, contact me at:

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