

Bloodtear Industy Index Report

Version 2

(Tyrannis)

Since the Dominion expansion there has been a new sovereignty mechanic that allows the development of system indices based on usage levels. It was quickly noted that raising the military index was extremely easy and took little time to maintain, but that the industry index would seemingly never increase despite how many miners you had.

The Bloodtear mining fleet has personally created five level 5 industry systems over the past year, and monitored them to gather this information. There were a few inaccuracies in the first report which we clarify here.

Industry is notoriously difficult to level up, and not much public information is available regarding details of the system. This report will attempt to answer all questions regarding the Industrial Index for the Dominion/Tyrannis expansion.



The System

The industrial index decays at a rate of 1% per hour (or around 25% per day). The index is increased by the total volume (m3) of mined goods. Mini-profession sites do not appear to contribute to the industry rating in a noticeable way, if at all. The following is a table illustrating the amount of m3 required to be mined to maintain each level:

Index Level	Mined volume to obtain (m3)	Volume/day to maintain (m3)	Man-hours/day to maintain
1	1,500,000	750,000	4.55
2	3,000,000	1,500,000	9.1
3	6,000,000	3,000,000	18.2
4	12,000,000	6,000,000	36.4
5	24,000,000	12,000,000	72.8

It should be noted that ice mining pulls up roughly half the volume of ore mining. So attempting to raise the index through ore mining is most preferred.

The belts respawn on a 4-day timer. If you drop below the threshold to maintain a belt, it will disappear during the next downtime. The index level of your system at downtime is what determines what will spawn. Server crashes and restarts count as a downtime. Because of the 1% decay an hour a system essentially has a 4-day buffer it can survive while in “free fall”. There is also an invisible 4-day buffer above level 5 which cannot be observed via the infrastructure hub.

Mining a hidden belt to extinction will respawn it within 5 minutes if there is no one left in the belt. The hidden belts must be scanned down using core probes. The larger a belt is the harder it is to scan down. Thus, small asteroid belts are the easiest to find. Belt scan signatures change after every downtime. Every *Ore Prospecting Array* upgrade gets you everything contained by the previous upgrades, plus the current.

Index Level	What you get
1	Small
2	Moderate
3	Large
4	Extra Large
5	Giant

The *Survey Networks* upgrade produces mini-profession sites (hacking and salvaging) in radar and magnetometric sites respectively. Survey Networks will NOT produce ladar sites (gas clouds), or true gravimetric sites. These sites will spawn sporadically, and we have circumstantial evidence to suggest that spawn rate is tied to system activity (i.e. more mining will lead to sites spawning more frequently). The sites are not gated, and thus rorquals can fly into them to clear out NPCs. Having a higher industry rating unlocks more challenging sites and increases spawn rates. I will not list them here because I believe they are racially specific to the region of space you reside in. Completing these sites does not appear to contribute to the industry rating of the system.

Perfect Miner Income

These are calculated with perfect skills, perfect Rorqual boosts, and T2 equipment, no drones. Skiffs are used only for mining mercorit, mackinaws only for ice, and hulks only for ore. The cycle times got about 8.5% faster after Tyrannis due to doubling the rorqual's mining cycle boost effectiveness – which in turns makes gaining a high level industrial system much easier. These numbers are used throughout the rest of the report as means of estimating per profits/hr and man-hours required.

	Yield/cycle	Cycle time	Yield/hr	Volume/hr
Skiff	82	119.25	2475.5	99,018
Mackinaw	4	183.23	78.59	78,590
Hulk	5459m3	119.25	164,800m3	164,800

Now the relative profit rates mining each ore type assuming perfect refine:

Ore	ISK/hr
Arkonor	55,905,928
Bistot	41,766,763
Mercorit	36,937,778
Crokite	31,463,123
Dark Ochre	20,640,299
Hedbergite	20,050,853
Hemorphite	18,940,684
Jaspert	17,215,944
Kernite	16,859,102
Gneiss	16,309,451
Spodumain	16,256,861
Pyroxeres	15,107,145
Plagioclase	15,054,759
Scordite	10,973,370
Omber	10,898,609
Veldspar	10,541,261

(Oct 20th 2010 prices)

Now we'll get into what each hidden belt contains, and what strategies you should use when mining them...

Small Asteroid Cluster

The small asteroid cluster is your first real foothold into the world of industry development. Up until this point you had to mine lots of small time asteroids that typically evaporated seconds into your cycle, leading to vast inefficiency, annoyance, and the need to move within range of new asteroids. The small asteroid cluster contains the single largest asteroid in the game, The Spod! The Spod is a whopping 4,000,000m³, at 250,000 units. It takes 24+ man-hours to mine this guy out, and doing so is enough to push a fresh level 1 system up into level 2. The entire belt is centered around The Spod.

The small belt is dispersed just enough to make you move 3-4 times if you're mining it out completely. The combined total wealth contained in the small belt is 938mil, at 7.66mil m³, and takes 47 man-hours to mine. If you mine the small belt to completion you'll be halfway through level 2.

Average income in this belt is 20.2mil/hr per perfect miner. Cherry picking (mining ABCM – arkonor, bistot, crokite, mercxit) potential in this belt is 266mil, taking 6.3 man-hours at an average profit of 42.1mil/hr.



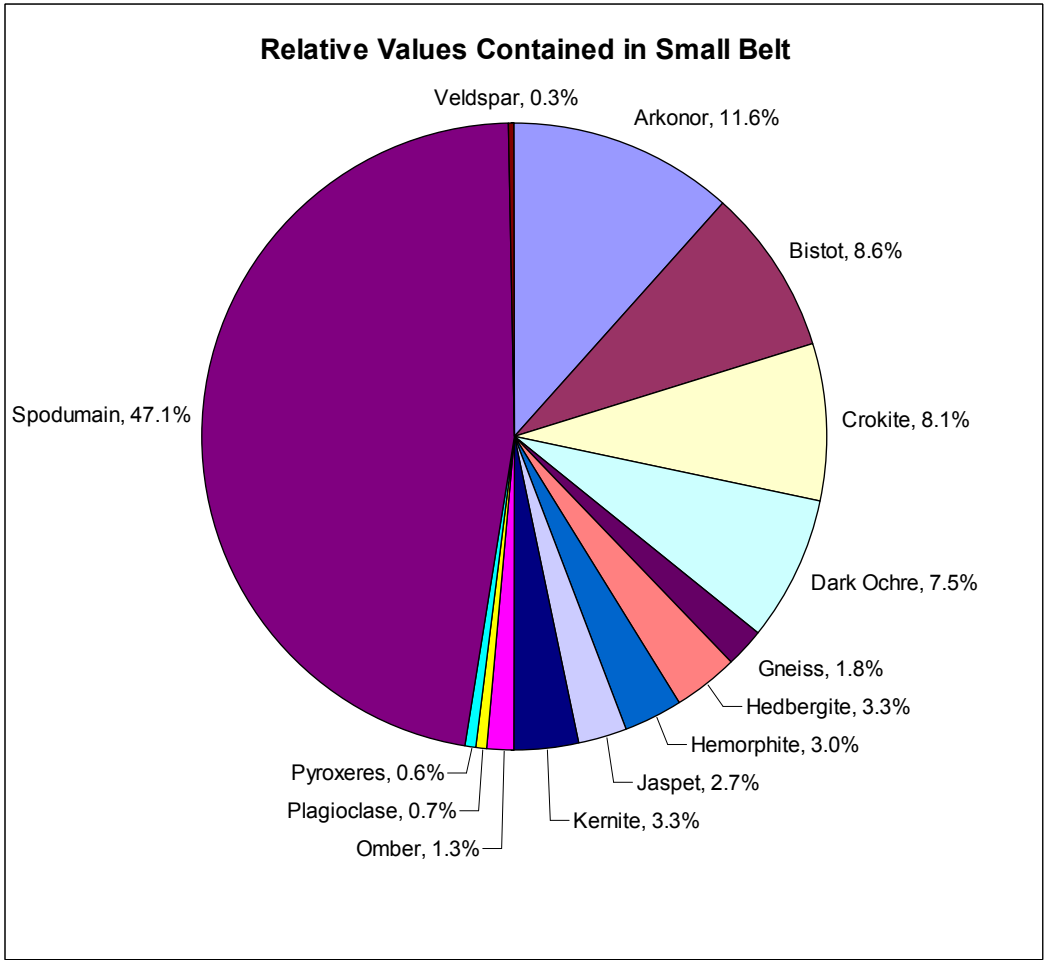
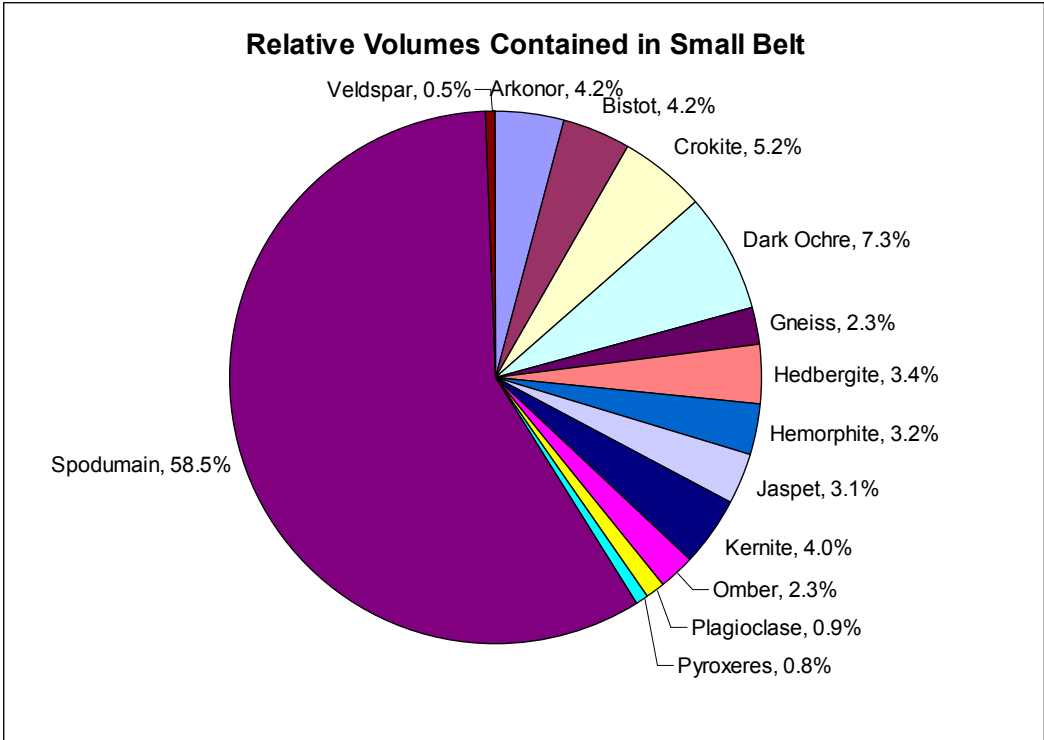
Figure 1: The Spod. It blots out the sun (sun blotting not illustrated).

List of ores contained within:

Ore	Amount	Asteroids
Arkonor	20,000	4
Bistot	20,000	4
Crokite	25,000	2
Dark Ochre	70,000	2
Gneiss	35,000	1
Hedbergite	86,000	5
Hemorphite	83,000	8
Jaspert	120,000	5
Kernite	254,000	6
Mercorit	0	0
Omber	300,000	5
Plagioclase	208,000	4
Pyroxeres	210,000	4
Scordite	0	0
Spodumain	280,000	2
Veldspar	406,000	5



Figure 2: Always be sure to bring proper protection. Hulks may be strong against rats, but players can scan you down in under a minute, and seconds if you have a large hauling ship (orca/rorqual).



Moderate Asteroid Cluster

The moderate belt is fairly dispersed with an even spread of ores. If you're a T2 miner (which you should be), then you'll be swapping out crystals often in here, and be forced to move often (6+ times). The belt is an arc about 180km across. The moderate belt is not worth mining to completion, it should only be cherry picked. The ABC represents 25% of the volume, and 50% of the value. This is the first belt you'll encounter with mercxit. Mercxit mining is HIGHLY inefficient with anything but a properly skilled skiff with mining crystals (and I mean that).

This belt is worth 813mil, which makes it worth LESS than the small. The volume is 5.35mil m3, taking only 34 man-hours to mine out. The average income is 23.8mil/hr per miner, which is slightly higher than the small belt. However, inefficiencies due to movement and constantly switching asteroids will bring the profit more in line with the small belt. Cherry picking potential however, is worth 455.5mil, taking 12.3hrs at a rate of 37.1 mil/hr.

If you do feel compelled to mine the medium, all the valuable ores are near the core and accessible without moving. The proper positioning for mining is illustrated below in figure 3 (note the dense cluster of asteroids within your 26km laser range). The outlying asteroids are light weights such as veldspar and scordite, a single roaming miner can consume them in decent time.

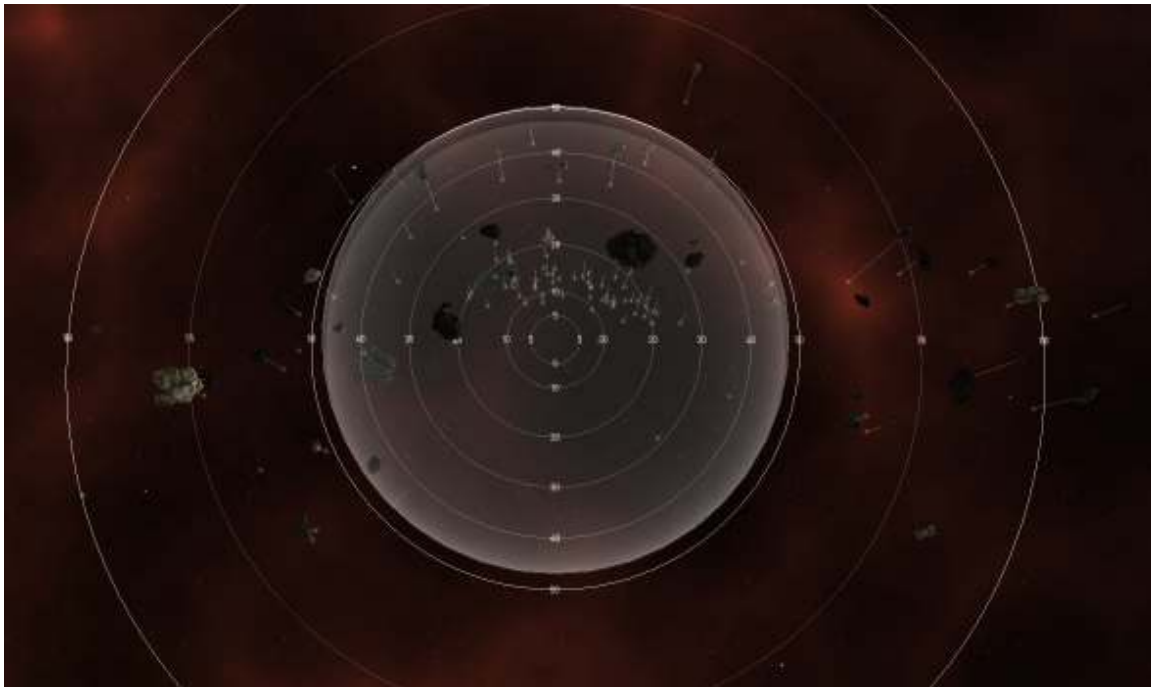


Figure 3: An overhead view of the medium belt.

List of ores contained within:

Ore	Amount	Asteroids
Arkonor	30,000	2
Bistot	35,000	4
Crokite	20,000	2
Dark Ochre	40,000	4
Gneiss	45,000	4
Hedbergite	100,000	4
Hemorphite	100,000	4
Jaspert	120,000	4
Kernite	400,000	11
Mercosit	10,000	1
Omber	400,000	11
Plagioclase	840,000	11
Pyroxeres	965,000	11
Scordite	940,000	13
Spodumain	40,000	4
Veldspar	1,260,000	13

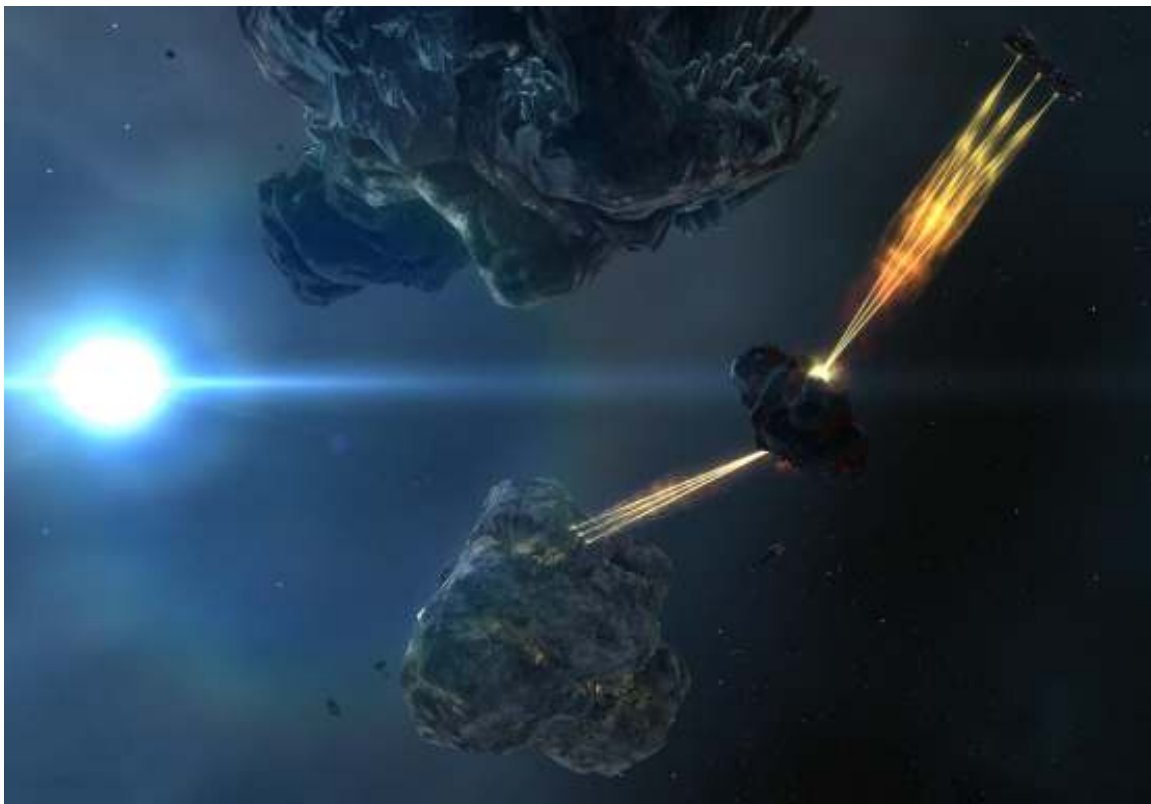


Figure 4: Cherry pickers consuming an arkonor asteroid.

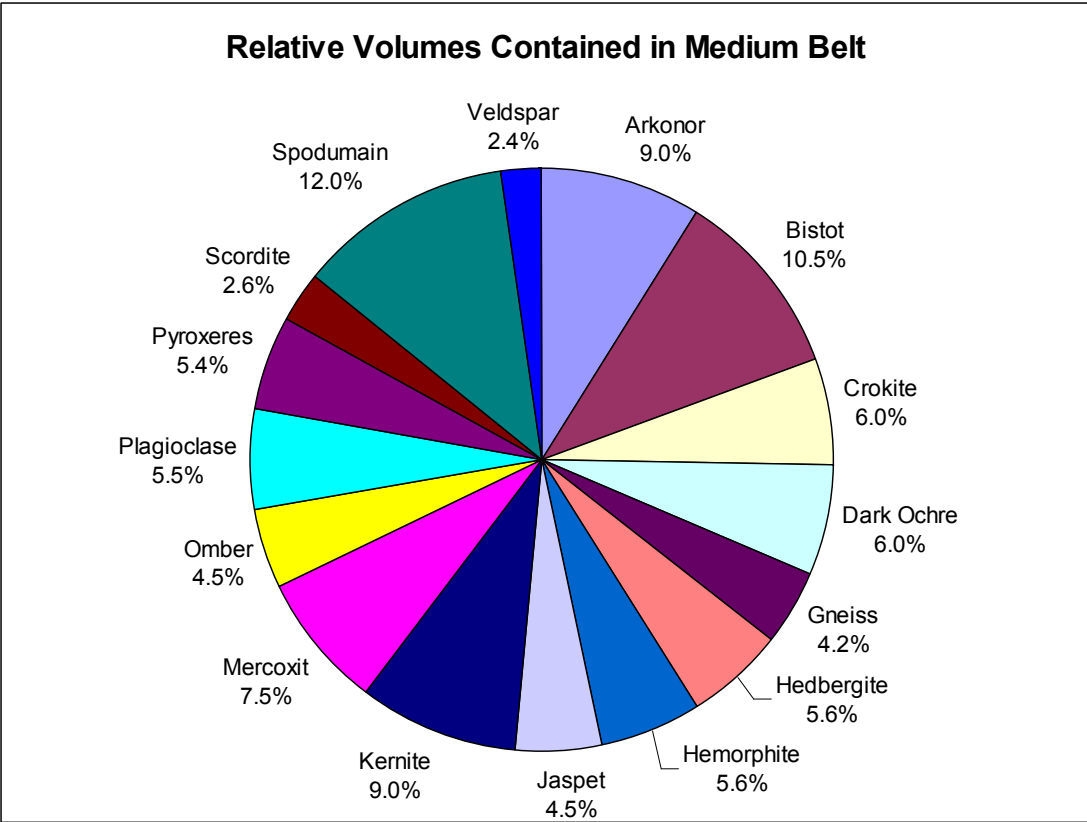


Figure 5: The moderate belt has a very well diversified collection of asteroids, which we hate.

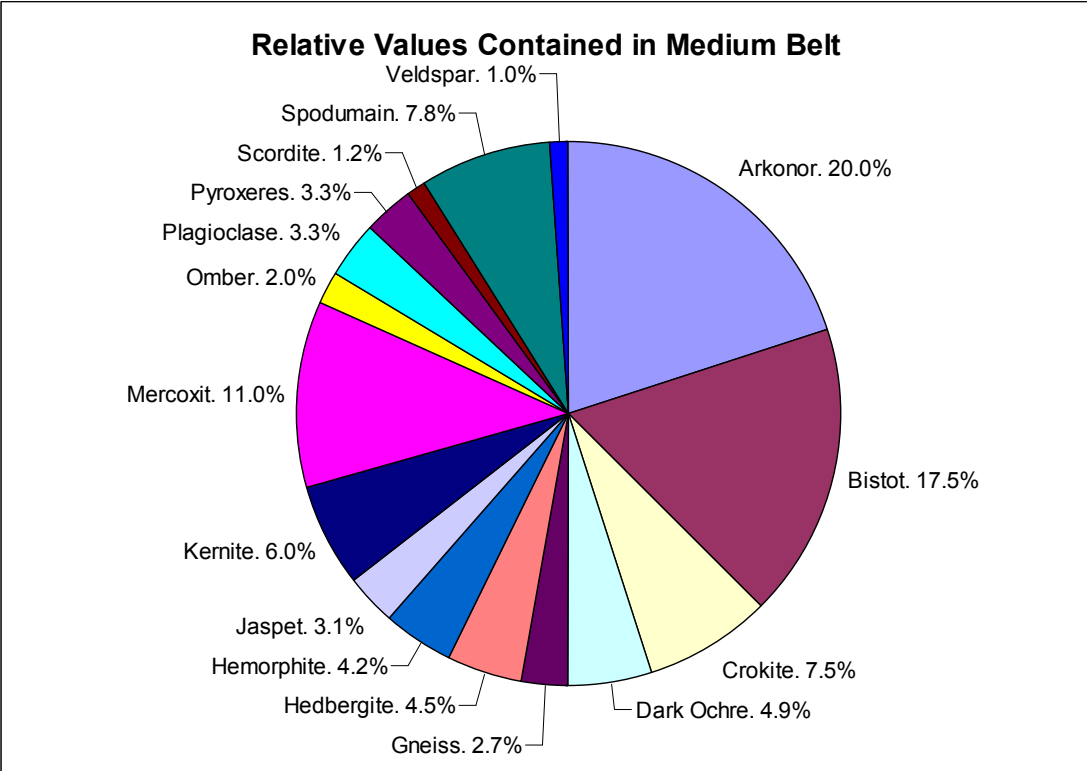


Figure 6: The value of ABCM is more than half the belt, while representing a third the volume. Cherry pick this.

Large Asteroid Cluster

If you learn anything from this report, learn this. The large asteroid belt (level 3) is the most value asteroid belt you have. The large asteroid belt is completely minable from only two warp-in spots, which eliminates the need for movement. There are only a handful of asteroids, but each is very large, which makes mining them much easier as well. The belt itself is centered on a few white space coral type things which can and will bounce your hauler if you warp in too close to them. The mercoxit patch is close to one of the warp-in spots, so steer clear of that when setting up.

This belt is small at only 5.38mil m3, and takes only 34 man-hours to complete. However, the average profit per miner is the highest of any belt, at 26.6mil/hr. This belt contains 44.6% ABCM by volume, which is the highest of any belt. The total belt is worth only 913mil, but because it's so small, it's easily the most profitable belt to mine to completion repeatedly.

The cherry picking potential of this belt is 604.6mil m3, taking 16.2hrs, at 37.4mil/hr. Note that this is just under half the belt – which gives a fair estimate that this belt is worth a lot.



Figure 7: A group of miners can reach the entire belt from two spots, making this a very pleasant mining experience. Haulers beware the white coral formations, you'll bounce off them.

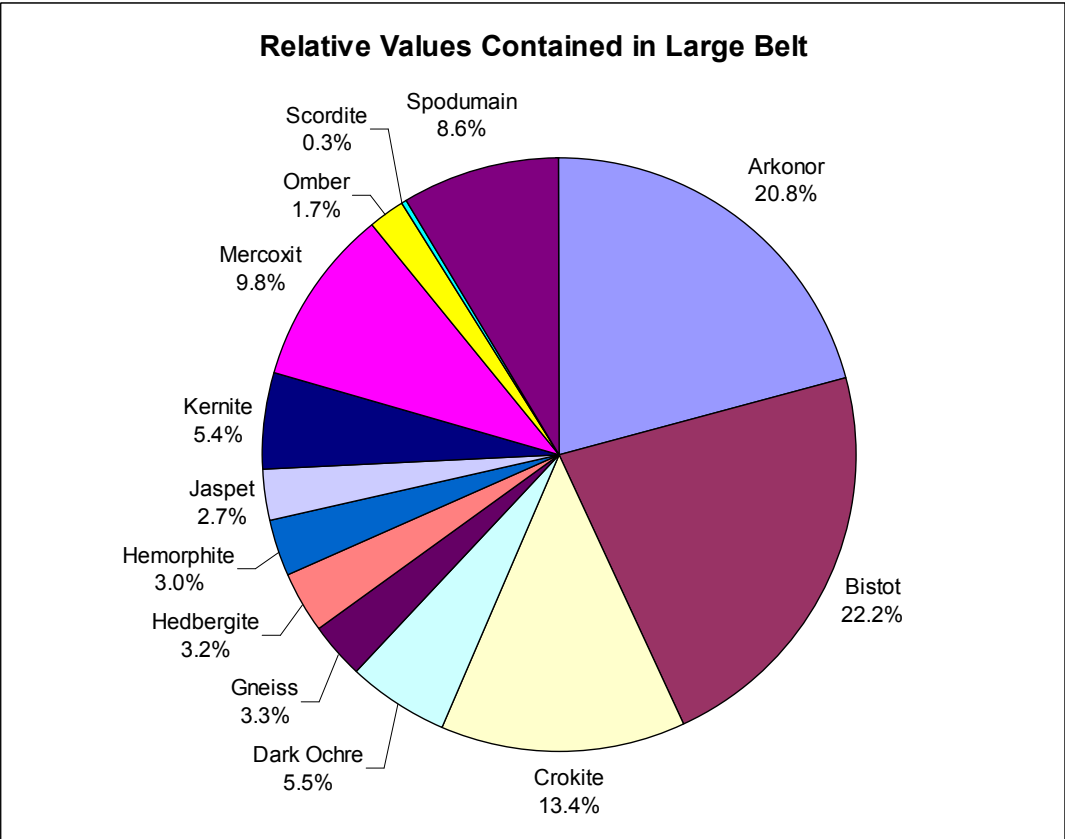
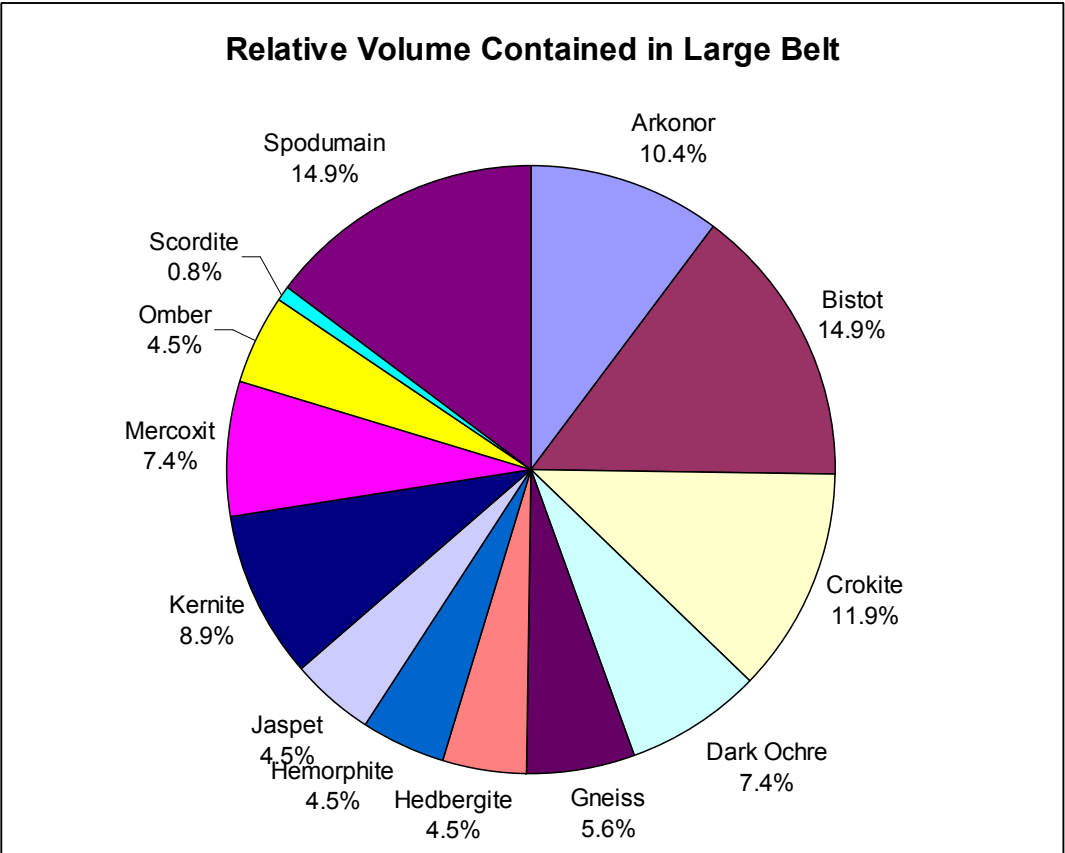
List of ores contained within:

Ore	Amount	Asteroids
Arkonor	35,000	1
Bistot	50,000	1
Crokite	40,000	1
Dark Ochre	50,000	1
Gneiss	60,000	1
Hedbergite	80,000	1
Hemorphite	80,000	1
Jaspert	120,000	1
Kernite	400,000	4
Mercosit	10,000	1
Omber	400,000	3
Plagioclase	0	0
Pyroxeres	0	0
Scordite	300,000	2
Spodumain	50,000	1
Veldspar	0	0

This distribution demonstrates how concisely packed the asteroids are. Most occurrences are only in one asteroid, of a size slightly larger than the other belts.



Figure 8: Dantooine is too remote to make an effective demonstration. You may fire when ready.



Extra Large Asteroid Cluster

The extra large asteroid belt is composed like the moderate belt, but only 120km long. As can be seen below from the asteroid counts, it contains lots of small and mid-sized asteroids, which will leave you shifting targets often.

The extra large is 11.2mil m3 which is more than twice the size of the medium and large belt. Taking 70 man-hours to mine, this is truly an extra large belt. It's worth 1,600mil with an average income of 22.7mil/hr. Cherry picking is worth 778.1mil, taking 21.6 man-hours at a rate of 36mil/hr.

I was originally a strong critic of using this belt for anything but cherry picking because of its size, but 85% the weight of the belt is accessible from one spot. Sitting at the core of the belt and mining everything with an income rate of hemorphite or higher will give you countless hours with minimal target shifting. By using this strategy you'd get 33.6 man-hours of mining and earn 1014.7mil at a rate of 30.2mil/hr. This would not cycle the belt, but it would eat half the belt at 30mil/hr. Mining the other half of the belt would only earn 16mil/hr, and should be left alone.

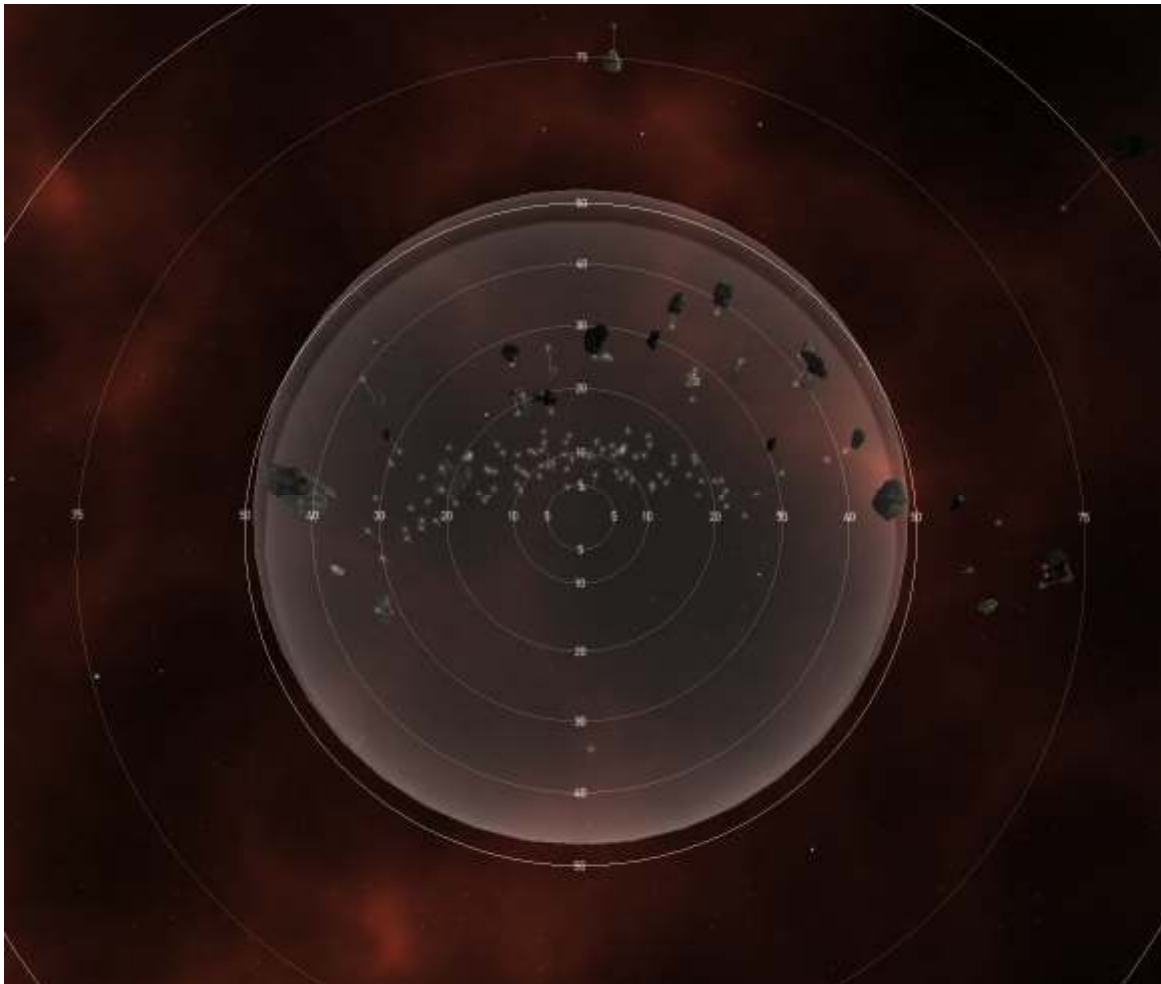


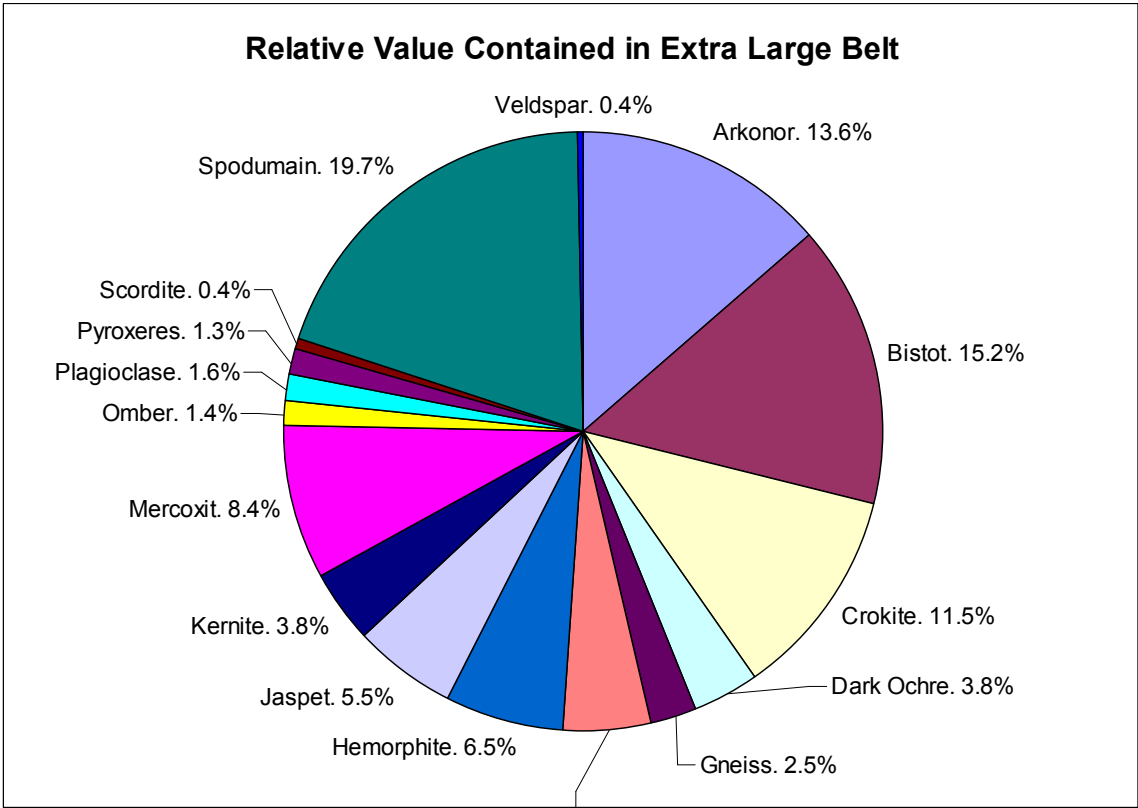
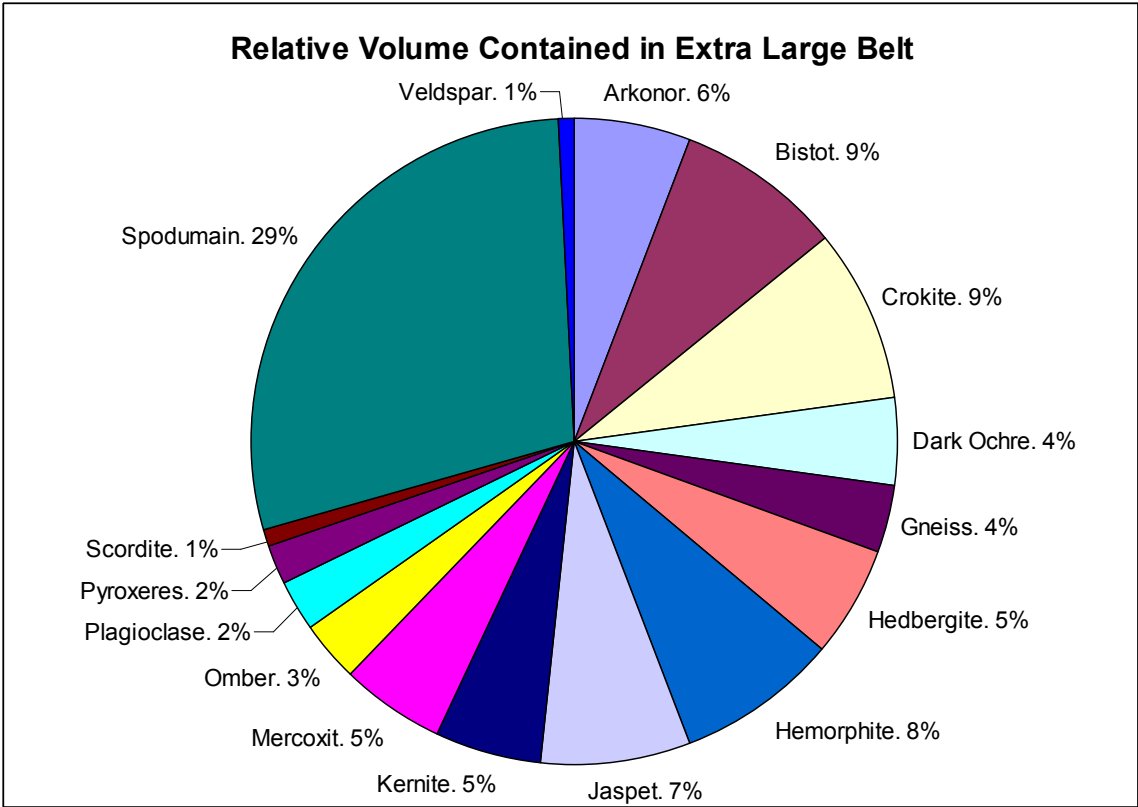
Figure 9: An overhead view of the extra large belt.

List of ores contained within:

Ore	Amount	Asteroids
Arkonor	40,000	4
Bistot	60,000	5
Crokite	60,000	5
Dark Ochre	60,000	5
Gneiss	80,000	6
Hedbergite	200,000	7
Hemorphite	300,000	10
Jaspert	420,000	11
Kernite	500,000	12
Mercosit	15,000	1
Omber	400,000	12
Plagioclase	560,000	12
Pyroxeres	765,000	10
Scordite	660,000	8
Spodumain	200,000	8
Veldspar	930,500	11



Figure 10: Mining is typically done broad spectrum with the miners to persist as long as possible in one spot before moving on.



Giant Asteroid Cluster

Welcome to level 5, you now cannot even maintain your system with three non-stop miners working 23hrs a day. You now have the giant asteroid belt, and it's a monstrosity. The giant belt is very vertical and spread out. Each asteroid is very large which means it'll take a long time before you have to move to another target. And I say move to another target because the asteroids are not situated well for any individual mining spot (20+ km between them).

The entire belt is 12.12mil m³, making it the largest hidden belt in the game. It takes 76 man-hours from perfect miners to mine it completely. The total value is 1.83bil, yielding income of 24.1mil/hr per miner. The ABCM ores compose more than a quarter the volume, and well over half the value. Cherry picking yields 974.6mil, takes 26.5hrs, and earns 36.9mil/hr. Mining this belt repeatedly may seem like a good idea, but you're still going to see more money if you cycle the large belt instead.



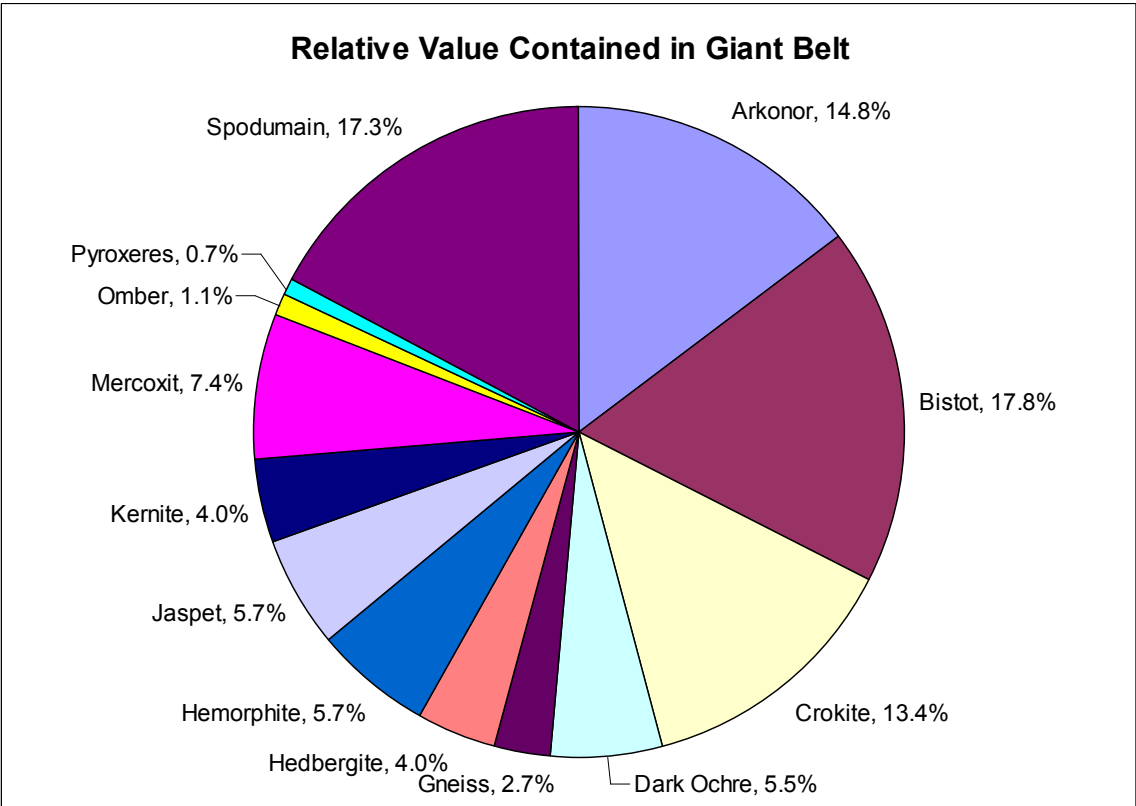
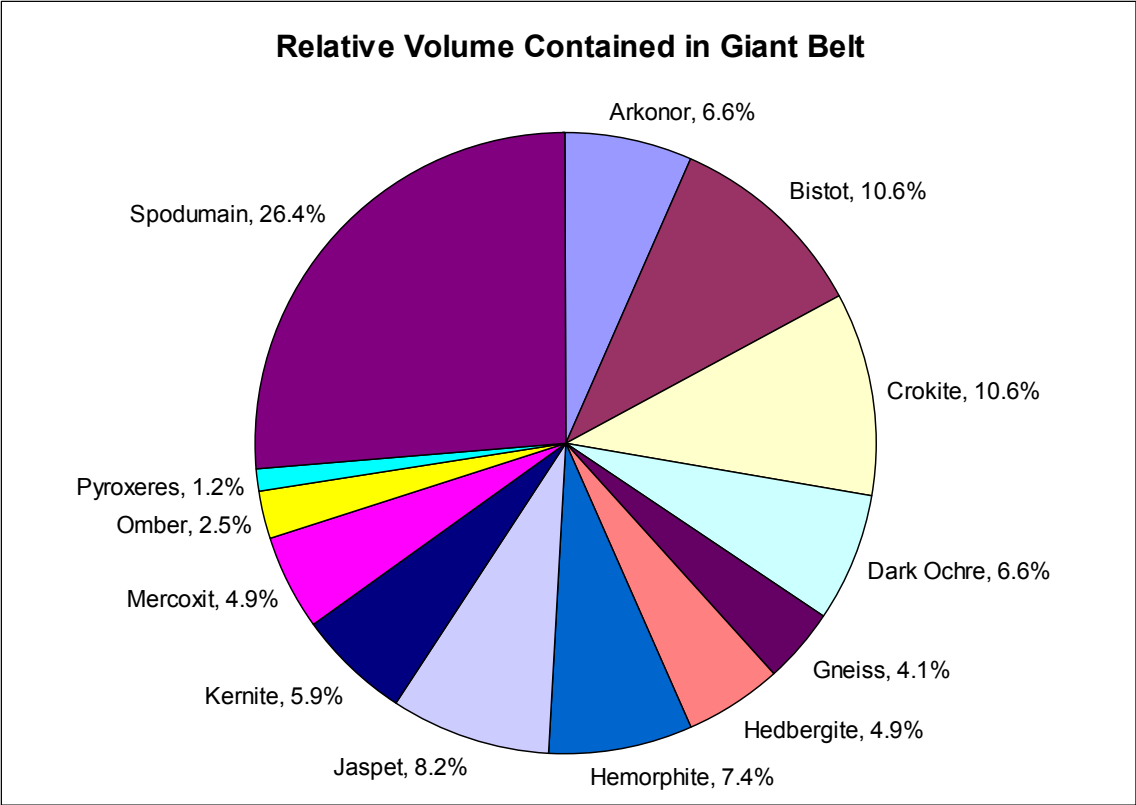
Figure 11: The giant belt is very tall (200-250km)

List of ores contained within:

Ore	Amount	Asteroids
Arkonor	50,000	1
Bistot	80,000	1
Crokite	80,000	1
Dark Ochre	100,000	1
Gneiss	100,000	1
Hedbergite	200,000	2
Hemorphite	300,000	3
Jaspert	500,000	4
Kernite	600,000	4
Mercosit	15,000	1
Omber	500,000	3
Plagioclase	0	0
Pyroxeres	480,000	6
Scordite	0	0
Spodumain	200,000	1
Veldspar	0	0



Figure 12: The giant belt requires a good deal of maneuvering and moving to get between asteroids. If you're a multiboxer it's a good idea to set your fleet of miners to "approach" the jetcan, and use a tractor beam on your hauler to drag the can around. Then lead your pack of miners around the belt by dragging the jetcan behind your hauler.



Belt Comparison

We've pulled all the data from each belt together for quick comparison. It's amusing to note that the moderate and large belts are smaller than the small. The Large Asteroid Belt has the highest percentage of ABCM, which gives it the highest average income rate if mined repeatedly.

	Vol (m3)	Time	Value (mil)	Income (mil/hr)	Percent ABCM
Small	7,663,200	47	939	20.18	13.57%
Moderate	5,355,500	34	812	23.83	32.86%
Large	5,385,000	34	913	26.63	44.57%
xLarge	11,210,550	70	1600	22.71	28.19%
Giant	12,124,000	76	1828	24.05	32.66%

Table 1: This table compares belt size(volume in m3), man-hours required to mine it (time), total value of the belt, average income rate, and what percent of the belt is poachable.

This is all well and good you say, but I'm a poacher, and I want to cherry pick all the ABCM without wasting time mining anything else. The following chart is for you:

	Vol (m3)	Time	Value (mil)	Income (mil/hr)
Small	1,040,000	6.3	266	47.5
Moderate	1,760,000	12.3	455.5	39.4
Large	2,400,000	16.2	604.6	40.4
xLarge	3,160,000	21.6	778.2	38.8
Giant	3,960,000	26.5	974.6	40.1

Table 2: This table compares the poaching potential of each belt, for consuming only arkonor, bistot, crokite, and mercoxit.

Now this is a perfect time to point out that mining only the ABCM is not enough to maintain the industry standing. Note that the belts are on a four day respawn timer, thus you only mine the cumulative volumes as noted above in Table 2. Below is a table of how sustainable each level is through only cherry picking. If you only wish to do cherry picking, then a level 2 or level 3 system is ideal.

	Volume per day	Volume/day to maintain (m3)	Percent maintained	ABCM manhours/day	Other manhours/day
Small	260,000	750,000	34.7%	1.6	3.0
Moderate	700,000	1,500,000	46.7%	4.2	4.9
Large	1,300,000	3,000,000	43.3%	7.9	10.3
Extra Large	2,090,000	6,000,000	34.8%	12.7	23.7
Giant	3,080,000	12,000,000	25.6%	18.7	54.1

Table 3: This table displays how far cherry picking will be able to maintain the industry standing at each level. Cherry picking man-hours are listed for fast reference, along with the man-hours required to make up the difference to maintain the industry level.

Belt Comparison

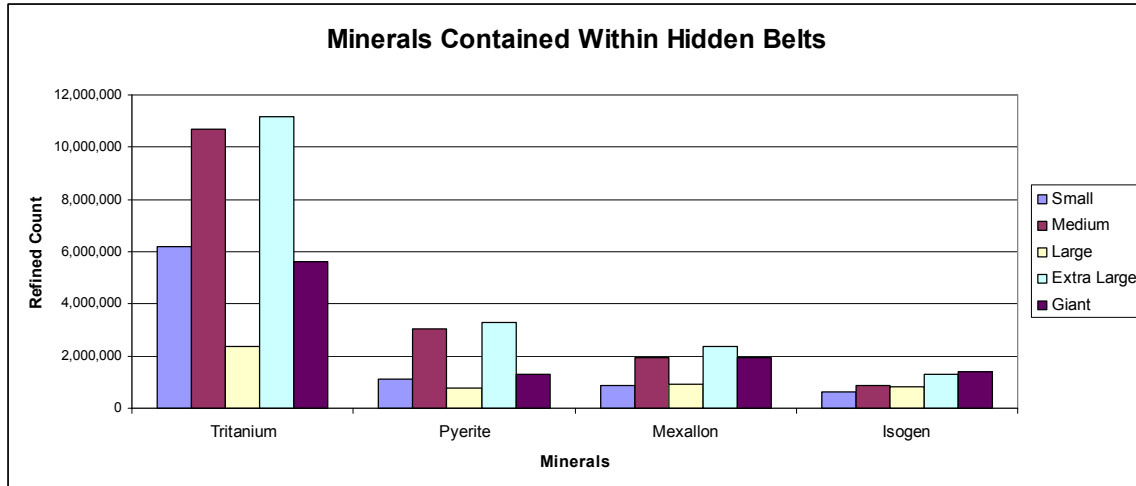


Figure 13: Low end minerals contained within each hidden belt.

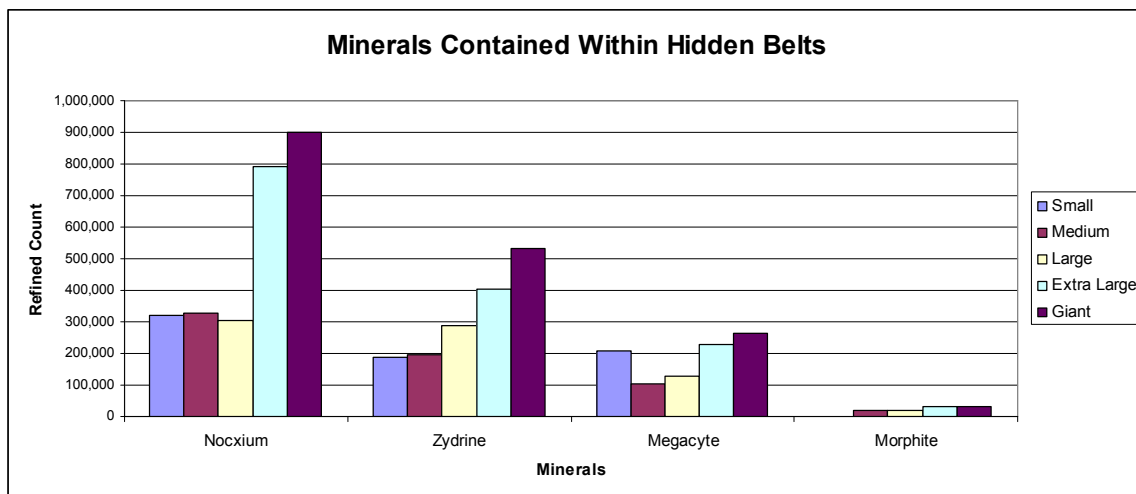


Figure 14: High end minerals contained within each hidden belt.

The hidden belts are good at obtaining high end minerals worth substantial sums. However, they are terrible at obtaining low end minerals such as tritanium and pyerite. This is the great imbalance of hidden belts which limits their usefulness for deep space mining operations. You may be able to mine all the high end minerals you need for construction jobs, but you'll still need to import low end stuff. There is no good way to mine large amounts of low end minerals, especially as veldspar rocks evaporate within a cycle of two of being touched.

Mining Strategy

This may sound foolish, since mining is point and shoot, but there are a number of things to take into consideration when setting up mining systems. The size of your corporation and number of regular active miners is obviously the most important. 1-2 miners can easily maintain a level 1 system with regular work, doubling the miner count for each level after that. Finding 32 regular unique miners to maintain a level 5 system is very hard. Most high level systems will be easier maintained by a few multiboxers sporting many accounts each.

Normal:

Maintaining a level 5 system is possible, but not realistically feasible, nor desirable. For ideally mining a level 5 system, you'd want to consume the high end ores (hemorphite and higher on the profit rate chart) from the small, moderate, extra large and giant belt, while cycling the large. At current rates you'd obtain 3,229 million from the non-large belts every 4 days, and 913mil for each large you cycle. To maintain the required 48mil m3 to maintain level 5 every four days, you'll need to cycle the large belt 6 times, and completely consume the high end ores out of the others. Doing this to minimally maintain level 5 is the most optimal way to milk the system, earning you 8.71bil every four days while taking 310 man-hours (77.5hrs/day). This yields 28.1mil/hr for each miner involved.



Figure 15: A high quality view of the Small Asteroid Cluster featuring The Spod.

Hardcore:

Okay, but you don't want to spend as much time AND you still want the profit. So here's what you do... you toggle the system between level 4 and level 5 (or equivalently between level 3/4, 2/3, or even 1/2). Right before downtime you mine a lot and raise the industry level to barely cross into the next level (you'll want a 2-3% buffer), and then the next day go cherry pick the new belt and then stop for the day. By doing this, the system will decay back to the lower level and the higher belt will disappear. The next day you then go around mining the high end ores of the other belts (and cycling the large if applicable), and time it such that you'll be back at the 2-3% buffer right before downtime. Using this strategy you can force valuable belts (such as the giant) to respawn every 2 days without ever mining them to completion.

The ideal situation is to obtain the giant belt, and then wait to decay back into level 4, and then cherry pick the ABCM before downtime. Start the next day at high level 4 and mine like crazy before downtime to reach level 5 again. Eat the ABCM ores out of the small, medium, and extra large belts, and enough of a large belt to reach level 5. The goal should be to only cross into level 5 an hour or so before downtime (thus limiting your decay to only 250k m3/hr for 90% of the time, while still getting twice the benefit of the giant belt).

The end result requires only 24-26mil m3 of mined goods every 4 days to balance between level 4 and level 5. Eating the ABCM from the small, medium, and extra large will get you 5.96mil m3 every four days (worth 1.5bil). Cherry picking the giant belt twice every four days will net 7.92mil m3 worth 1.95bil. Then you'll need to cycle the large belt 2.25 times as well, getting you 12.12mil m3 and 2.05bil isk. The combined total is 26mil m3 taking 170 man-hours and netting 5.5bil, an average of 32.4mil/hr per miner. This is better than mining pure crokite. Many Bothans died to bring you this information.

Multi-System:

Great, but I like normal schedules, is there another way to get good income? Yes there is. For the same amount of work of sustaining a level 5 system, you can sustain two level 4 systems. Cherry picking the small, moderate, and extra large, and cycling the large 3.35 times every four days, you'll earn 9.12bil, taking 310 man-hours at a rate of 29.4mil/hr.

Splitting your efforts between two systems decreases the chance that you'll be noticed by enemy forces. So now you're thinking we can continue this pattern of having twice as many systems, at one less industry level to earn more money. Having four level 3 systems requires cycling the large belt 1.71 times in each system every four days. This strategy earns 9.13bil and takes 77.6hrs per system (310hrs total). This yields 29.4mil/hr for each miner involved. So the income is the equivalent, and the coordination between 4 systems is probably a lot harder.

	Value	Manhours	Rate
Normal	9.12bil	310	28.1 mil/hr
Multi-system	9.12bil	310	29.4 mil/hr
Hardcore	5.5bil	170	32.4 mil/hr

Table 4: Using minimalistic ideal strategy to maximize profit at minimal time use. The numbers are estimated over the four day respawn cycle.

Scaling down to eight level 2 systems however does not earn a higher income (and would be insane to manage). The next section discusses why you do not want a level 5 system.



Figure 16: The large belt is the key to profit mining with the hidden belt system.

Consequences

"WoW.... bunch of filthy carebears..... industry level V..... I guess it might piss ya off to have this system locked down huh?"

Bogels, -A-

The higher your industry rating the more reds will come to visit you. If you have a level 5 system they will permacamp in cloaked vessels all day just to spite you. We've personally created five level 5 systems during Dominion, and all of them ended up being permacamped until they decayed back to level 3. At any given point, only one or two solar systems in the galaxy will be level 5 industry, and players will seek you out. If there is a station in your system, you will get twice as many reds. Without a way to conceal the industry standing of your system this is unavoidable, and quickly renders any level 5 systems pointless.

This is why you are much better off maintaining a series of lower level systems, which will not attract unwanted attention. Level 4 systems are common throughout the game because they are easy to maintain, and reds will not permacamp them. Level 3 systems are ignored entirely. Couple this fact with the increased profit from having many smaller systems - this is obviously the way to go.

You work very hard to obtain your high level industry system, but you inevitably have to go to bed. If you're an American, expect all valuable ores to be poached long before you arrive. Downtime occurs in the middle of the night for Americans and middle of the day for Europeans. This gives a massive advantage to the European player base who can cash in on everyone else's work (earning the cherry picker's salary of 40mil/hr), while the people who actually maintain the system earn far less (around 15mil/hr on average).

Conclusion

The industry index system levels are exponentially larger than the last, making it very difficult to achieve high levels. Recent Rorqual boosts have improved mining yields by ~8.5%, making this a prime time to create industrial systems. The best hidden belt is the Large Asteroid Cluster at level 3. It offers the best money when mined repeatedly. Maintaining a number of level 3 systems is preferable to fewer level 4 or level 5 systems. Having many level 3 systems offers better yields, and avoids the attention of reds who seek to disrupt your activities. A level 5 system is not feasible to maintain because afk cloaked campers will occupy your system within days, rendering it too risky to mine in.

Europeans receive the most benefit from the hidden belt system, as all belts respawn during their prime time, leaving them with the most accessibility to the valuable ores. This leaves the American time zones without much profit to be had unless strict regulation is maintained over the system to prevent poachers. On average any given level is supported about 40% by cherry picking, but cherry picking alone will make you decay. The hidden belt system produces high end minerals very readily, but it is all but impossible to obtain tritanium and pyerite in any bulk from them. The time has never been better to go build up your industry index.



Figure 17: Ship your refined minerals carefully. Do not stack freighters with more than 2bil of goods inside or risk being ganked in empire.