Report No. D-2011-042 February 18, 2011

Inspector General
United States Department of Defense

Lean Six Sigma Project - Defense Logistics Agency/Honeywell Long-Term Contract Model Using One-Pass Pricing for Sole-Source Spare Parts

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See Appendix A for Acronyms and Abbreviations.

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Department of Defense
400 Army Navy Drive
Arlington VA 22202-4704

February 18, 2011

MEMORANDUM FOR UNDER SECRETARY OF DEFENSE FOR ACQUISITION, TECHNOLOGY, AND LOGISTICS
DIRECTOR, DEFENSE LOGISTICS AGENCY

SUBJECT: Lean Six Sigma Project – Defense Logistics Agency/Honeywell Long-Term Contract Model Using One-Pass Pricing for Sole-Source Spare Parts (Report No. D-2011-042)

We are providing this nonaudit service report for your information and use. The report is being published in final form. The Lean Six Sigma Project was a collaborative effort with officials from the DoD Lean Six Sigma Program Office, the Defense Logistics Agency, Honeywell International, Incorporated, and the DoD Office of Inspector General. The project reduced prices for 348 sole-source spare parts by $9.5 million and canceled $3.2 million of overprocured automated orders. The project also recommended improvements to the process that have been incorporated into standard operating procedures.

Personally identifiable information for team members was redacted from this version of the report.

We appreciate the courtesies extended to the staff. Please direct questions to me at (703) 604-9201 (DSN 664-9201).

Richard B. Jolliffe
Assistant Inspector General
Acquisition and Contract Management

Lean Six Sigma Project – Defense Logistics Agency/Honeywell Long-Term Contract Model Using One-Pass Pricing for Sole-Source Spare Parts

What We Did: To address concerns with the length of the Defense Logistics Agency(DLA)/Honeywell contract (12 years) without a significant pricing review and the effectiveness of the one-pass pricing process, the project was initiated to determine whether actual costs had increased in line with inflation. The purpose of escalation clauses is to provide adjustments to the contract price as a result of changes in the national economy, so that the contractor will realize neither economic benefit nor economic loss because of economic fluctuations.

What We Found

The project resulted in significant improvements to the strategic supplier alliance with Honeywell International, Incorporated (Honeywell). Specifically, the project recommended a repricing clause (at the 3- to 5-year mark), which will help ensure that pricing is fair and reasonable over the course of the long-term contract. The project also recommended using a statistical sample to effectively reprice thousands of items.

Overall, the project reduced prices on 348 sole-source spare parts valued at about $100.8 million (based on 3-year sales) to $91.3 million, or by about $9.5 million or 9.4 percent for future procurements. This should generate $3.16 million in annual recurring savings. The project also showed that prices have increased less (11.7 percent) than the inflation rate over a 19-year period, and significant administrative savings have been obtained by DLA and Honeywell.

The project also identified $3.2 million of overprocured automated orders, which were canceled.

Benefits of the One-Pass Pricing Process

The one-pass pricing process involved real-time advice from DLA Cost/Price, DoD Office of Inspector General (OIG), Defense Contract Audit Agency (DCAA),* and Defense Contract Management Agency (DCMA) to the DLA contracting officer reviewing the Honeywell cost proposal. The process provided a high level of confidence in the negotiated prices because costs were examined before items were placed on long-term contracts. The one-pass pricing process:

- reduced and stabilized prices using current cost data;
- reduced administrative costs for both Honeywell and DLA; and
- provided transparency of Honeywell costs and the basis for those costs, which allowed the Government to price parts at the most economical order quantities, to assure the best value for DoD and the taxpayer.

*On August 5, 2008, DCAA discontinued participation in integrated product teams, to include one-pass pricing, due to concerns that its participation would result in noncompliance with Generally Accepted Government Auditing Standards.

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Lean Six Sigma

Background

Definition. Lean Six Sigma (LSS) is a business improvement methodology which combines (as the name implies) tools from both Lean Manufacturing and Six Sigma. Lean Manufacturing focuses on speed, and traditional Six Sigma focuses on quality. The result of combining the two is better quality faster.

DoD Establishment. On April 30, 2007, the Deputy Secretary of Defense established the DoD-wide continuous process improvement (CPI)/LSS Program Office. Furthermore, the Deputy Secretary declared that aggressive implementation of CPI/LSS within all levels of DoD would go a long way to support business transformation efforts and, as with other parts of DoD's ongoing culture change, all levels of DoD's organization need to be involved with CPI/LSS.

DoD CPI/LSS Program. The LSS Program Office uses a disciplined performance improvement methodology to improve the efficiency and effectiveness of DoD business operations supporting the warfighter. The office drives DoD-wide performance improvement activities, tracks results, provides training, assists DoD in the establishment and growth of its program, and captures the best business practices enterprise-wide. The LSS Program Office helps DoD Components achieve their goals.

Five-Step Data-Driven Process. LSS uses a modern problem-solving method, Define-Measure-Analyze-Improve-Control (DMAIC). DMAIC uses data to:

- confirm the nature and extent of the problem,
- identify true causes of problems,
- find solutions that evidence shows are linked to the causes, and
- establish procedures for maintaining the solutions even after the project is done.

The purpose of the **Define** phase is for the team to agree on what the project is. In the **Measure** phase, teams evaluate the existing measurement system, observe the process, gather data, and map the process in more depth. In the **Analyze** phase, teams develop theories of root causes, confirm the theories with data, and finally identify the root cause(s) of the problem. In the **Improve** phase, teams identify a range of possible solutions, review existing best practices to see if any can be adapted to the situation, develop criteria for selecting a solution, pilot the chosen solution, and plan for full-scale implementation. The purpose of the **Control** phase is to make sure that any gains a team makes last. During the **Control** phase, teams document the new and improved process, train everyone, set up procedures for tracking key "vital signs," hand off ongoing management to the process owner, and complete project documentation.

Spare Parts Pricing History

Background

History of Sole-Source Spare Parts Pricing. Over the past 50 years, Congress and the Government have tried various methods to avoid paying excess prices and profits for sole-source spare parts. From the Truth in Negotiations Act (TINA), to spare parts breakout, to commercial pricing, the overarching goal has been to reduce prices for spare parts whether using cost-based or price-based acquisition procedures.

Spare Parts Pricing Problems. In the 1980s, various audits, congressional investigations and media disclosures indicated that DoD paid excessive prices for many spare parts and supplies, often sole-source procurements from contractors who did not manufacture the items. These disclosures caused both DoD and Congress to take action to improve procurement prices on DoD spare parts.

Spare Parts Pricing History (cont'd)

Background

DoD OIG Audits. Starting in 1998, various audits by the DoD OIG again showed that DoD was paying excessive prices for many spare parts and supplies.

One of the audits, DoD IG Report No. 99-218, "Sole-Source Noncommercial Spare Parts Orders on a Basic Ordering Agreement," July 27, 1999, found that DLA was not able to effectively negotiate fair and reasonable prices for sole-source noncommercial spare parts procured from Allied Signal (now Honeywell) and DLA paid 18 percent more than fair and reasonable prices.

Action to Address Problem

Background

DoD Sponsored Rapid Improvement Team to Address Pricing Problems. In June 1999, the Director, DLA, and Deputy Under Secretary of Defense (Acquisition Reform) chartered a rapid improvement team for the development of a new "strategic supplier alliance" between DLA and Honeywell.

Part prices were negotiated on a Federal Acquisition Regulation Part 15 contract with Cost Accounting Standards(CAS)/TINA waivers using the one-pass pricing process (escalation provisions) but were not repriced for the life of the 12-year contract. The one-pass pricing process involved real-time advice from DLA Cost/Price, DoD OIG, DCAA, and DCMA to the DLA contracting officer reviewing the Honeywell cost proposal. The process provided a high level of confidence in the negotiated prices, and costs were examined before being placed on long-term contracts. The process provided complete transparency of Honeywell costs and the basis for those costs, which allowed the Government to price parts at the most economical order quantities, to assure the best value for DoD and the taxpayer.

Before the DLA-Honeywell Strategic Supplier Alliance contract was awarded in June 2000, most of these sole-source spare parts were procured on a basic ordering agreement (individual orders) under the cost or pricing threshold. From 1996 to 1998, DLA issued 5,767 delivery orders to Honeywell, totaling $115.5 million.

One-Pass Pricing – Six Sigma Project

Background

Benefits of the One-Pass Pricing Process. The one-pass pricing process resulted in two significant benefits:

- Prices were reduced and stabilized using current cost data.
- Administrative costs were reduced for both Honeywell and DLA.

Six Sigma Project. To address concerns with the length of the contract (12 years) without a significant pricing review and the effectiveness of the one-pass pricing process, the project was initiated to determine whether actual costs had increased in line with inflation. The purpose of escalation clauses is to provide adjustments to the contract price as a result of changes in the national economy, so that the contractor will realize neither economic benefit nor economic loss because of economic fluctuations.

We employed DoD LSS Program Office templates and Minitab statistical software to complete this project. To obtain additional information about this project, including copies of the official DoD LSS final product and documents for each DMAIC phase, please send an e-mail to audacm@dodig.mil.

See Appendix A for acronyms and abbreviations and Appendix B for statistical definitions used throughout the document.

Overall

Results

The project resulted in significant improvements to the strategic supplier alliance with Honeywell. Specifically, the project recommended a repricing clause (at the 3- to 5-year mark), which will help ensure that pricing is fair and reasonable over the long-term contract. The project also recommended using a statistical sample to effectively reprice thousands of items.

Overall, the project reduced prices on 348 sole-source spare parts valued at about $100.8 million (based on 3-year sales) to $91.3 million, or by about $9.5 million or 9.4 percent for future procurements. This should generate $3.16 million in annual recurring savings. After completion of the project, prices were shown to have increased less (11.7 percent) than the inflation rate over a 19-year period, and significant administrative savings have been obtained by DLA and Honeywell. The project also identified $3.2 million of overprocured automated orders, which were canceled.

Sample Results

Results

As shown below, we selected 348 parts from the population of 2,826 items to reprice. After we repriced the sample items, the projected savings, at a 90-percent confidence interval, ranged from $3.05 million (1.8 percent) to $16.97 million (10.3 percent), with a midpoint of $10.01 million (6.1 percent), from the population value of $165.15 million.

Sample selection

Stratum	Sample	Population ($ millions) Items	Value*
≥$250,000	118	118	$ 80.00
$100,000–$249,999	100	246	38.93
$25,000–$99,999	100	623	31.92
<$25,000	30	1,839	14.30
Total	**348**	**2,826**	**$165.15**

Stratified variable projection with 90-percent confidence interval ($ millions)*

Lower Bound		Point Estimate		Upper Bound	
Value	Savings	Value	Savings	Value	Savings
$148.17	$16.97	$155.14	$10.01	$162.10	$3.05
	-10.3%		-6.1%		-1.8%

*Slight rounding inconsistencies exist in calculations.

Negotiated Results

Results

The prices for the 348 parts were reduced from $100.8 million (based on 3-year sales) to $91.3 million, or by $9.5 million or 9.4 percent for future procurements. The negotiated results fit within the sample projection at the 90-percent confidence level discussed on the previous page. The table below shows the results separated by dollar value.

		Honeywell Contract		Savings	
Dollar Value	Items	Sales*	Repriced	Amount	Percent
≥$250,000	118	$79,997,330	$72,216,670	($7,780,660)	(9.7)
$100,000–$249,999	100	15,552,298	13,995,737	(1,556,561)	(10.0)
$25,000–$99,999	100	4,942,289	4,749,383	(192,906)	(3.9)
<$25,000	30	278,381	308,337	29,955	10.8
Total	**348**	**$100,770,299**	**$91,270,127**	**($9,500,172)**	**(9.4)**

*We used 2006–2008 Honeywell sales data to calculate the Honeywell contract price.

Prices Were Reduced

Results

Current cost-based contract prices for 329 of 348 items (19 items could not be traced to a previous contract) were 11.7 percent lower than previous contract prices (on average, 19 years old) that were inflated to today's dollars.

Range of Percent Increase (Decrease)	Items	Percent Items	Percent Total Price	Total Price[1] Previous Contract[2]	Total Price[1] Honeywell Contract	Total Price[1] Percent Difference
100+	44	13.4	14.3	$ 1,514,613	$ 4,051,529	167.5
50-99	32	9.7	8.8	1,408,397	2,495,951	77.2
0-49	73	22.2	21.3	4,890,224	6,026,095	23.2
(1-98)	180	54.7	55.6	24,258,847	15,735,799	(35.1)
Total	**329**	**100.0**	**100.0**	**$32,072,080[3]**	**$28,309,374**	**(11.7)**

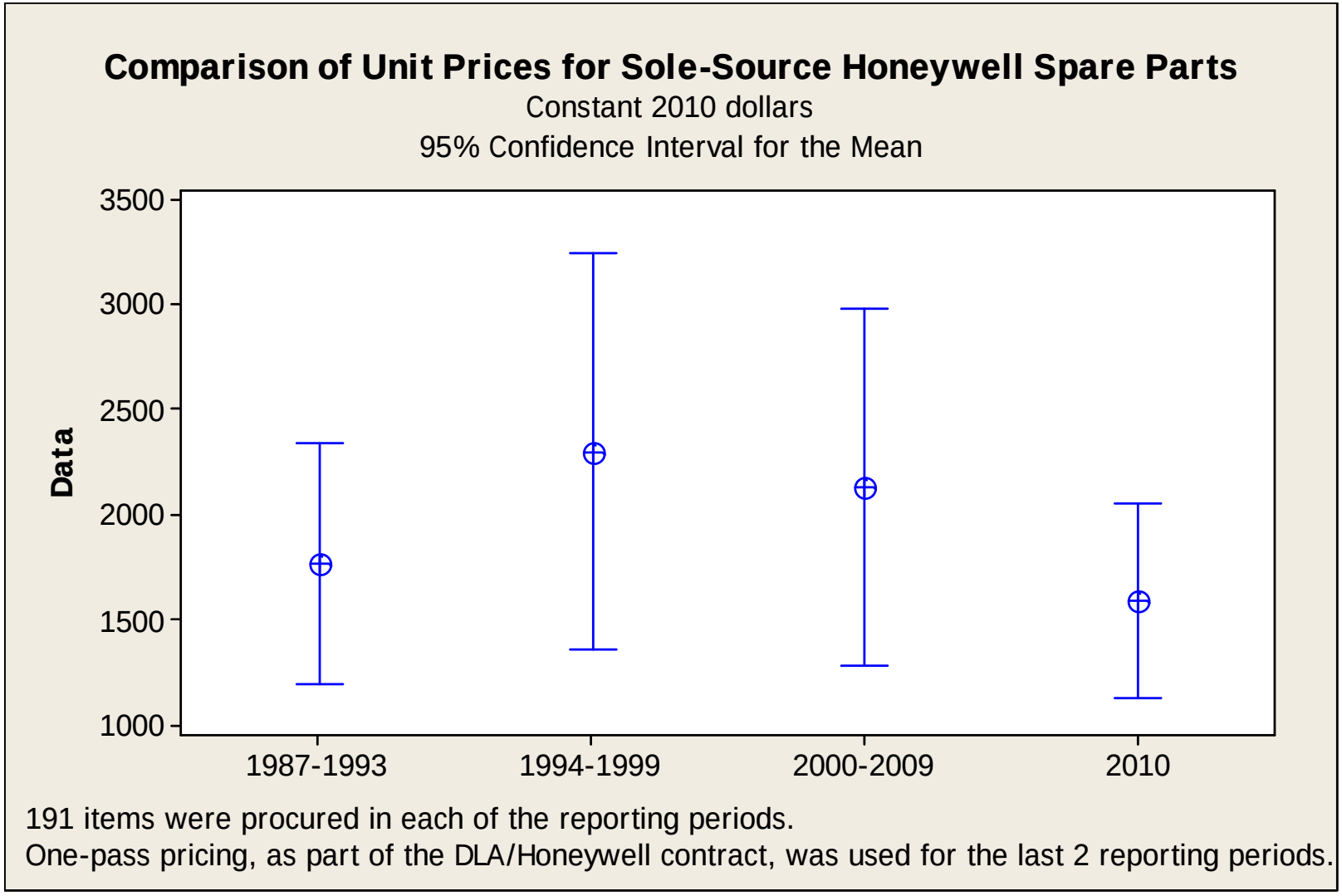
[1]Calculated based on 2009 Annual Demand Quantities provided by the DLA Office of Research and Resource Analysis.

[2]Previous contracts used in the comparison were awarded between 1985 and 2007 and were not the Honeywell Strategic Supplier Alliance contracts. The previous contracts were awarded an average of 19 years before the 2010 Honeywell contract prices and were inflated using the Bureau of Labor Statistics Index for Aircraft Engine and Engine Parts Manufacturing.

[3]Slight rounding inconsistencies exist because auditor calculations were based on two decimal places.

Prices Were Reduced (cont'd)

Results



191 items were procured in each of the reporting periods.
One-pass pricing, as part of the DLA/Honeywell contract, was used for the last 2 reporting periods.

PRICES BEAT INFLATION.

DLA Overprocured Automated Orders

Results (other)

Delivery Order	Part	National Stock Number	Quantity Ordered	Quantity Available	Quantity Canceled	Unit Price	Total Price	Realized Savings	Notes
7371	365049-5	2835003033543	77	51	0	$736.37	$37,555		Shipped
6809	364920-7	2835003095712	24	24	0	2,398.28	57,559		Due to ship 4/18/2009; cannot cancel
7495	364920-7	2835003095712	15	15	15	2,398.28	35,974	$35,974	OK to cancel; requested modification
2943	366931-2	2835014657679	242	122	122	1,370.57	167,210	167,210	Shipped 75; Can cancel 122
3565	366931-2	2835014657679	313	313	313	1,428.13	447,005	447,005	OK to cancel; requested modification
5713	366931-2	2835014657679	245	245	245	1,428.13	349,892	349,892	OK to cancel; requested modification
6430	366931-2	2835014657679	38	38	0	1,482.40	56,331		Shipped
6665	366931-2	2835014657679	69	69	0	1,482.40	102,286		Scheduled to ship January through March; cannot cancel
2265	367857-4	2840014663026	338	338	201	7,002.70	2,366,913	1,407,543	Reduced by 201 and closed
6300	367857-4	2840014663026	96	96	96	7,133.29	684,796	684,796	Canceled already
6661	367856-3	2840014724842	151	80	0	5,809.06	464,725		Due to ship 1/15/09; cannot cancel
Various	3822536-1	2915014874603	19	19	0	2,405.99	45,714		Shipped 4 1/16/09; cannot cancel
Various	3822536-1	2915014874603	40	40	40	2,286.49	91,460	91,460	OK to cancel; requested modification
6342	365357-1	3020003141489	132	132	132	321.49	42,437	42,437	Confusion on this one; do not see an order
6066	367893-1	4820014791916	51	29	0	752.67	21,827		Shipped 31 due to ship 20 2/26/09; cannot cancel
6217	367893-1	4820014791916	120	120	0	752.67	90,320		Due to ship 3/13/09; cannot cancel
6264	367893-1	4820014791916	86	86	0	752.67	64,730		Due to ship 3/20/09: cannot cancel
6296	367893-1	4820014791916	2	2	0	752.67	1,505		Due to ship 3/23/09; cannot cancel
							$5,128,237	**$3,226,317**	

$3.2 million of overprocured orders were canceled.

Charter & Timeline

Define Tollgate

Team Members			
Name	**Role**	**Affiliation**	**RACI**
[redacted]	Sponsor/Champion	DOD OIG	Approver
[redacted]	Process Owner	DLA Aviation/ Honeywell	Approver
[redacted]	Black Belt	DOD OIG	Responsible
[redacted]	Master Black Belt	OSD-DCMO	Responsible

Project Charter

Problem Statement	Prices for spare parts (2,826) on long-term contracts with Honeywell have increased due to escalation indices and other contract terms, and no provisions were included in initial contract for rebaselining prices on the 12-year contract.
Business Case	1) Attain fair and reasonable prices for Honeywell parts. 2) Show effectiveness of one-pass pricing. 3) Demonstrate whether certified data are required for fair and effective pricing. 4) Document lessons learned = contractors can decrease cost with incentive of long-term contract. 5) Replicate new contract pricing methodology for future contracts. 6) Achieve administrative cost savings (avoidance) with new methodology for future contracts. 7) Prove concept.
Goal statement	To determine if the one-pass pricing concept is effective for DoD to procure sole source items at fair and reasonable prices.
Unit	Price for one Honeywell sole-source spare part.
Defect	Any part whose price exceeds previous year's price + inflation(+/-15%) or whose profit level is excessive.
Customer Specification(s)	Part price that does not exceed previous year's price + inflation. In addition, profit cannot be unreasonable/excessive.
Measure Start	Repricing at option year based on escalation and those parts identified by Honeywell or DLA with large price increases.
Measure Stop	Exercise option price; contract officer signs modification.
Scope	DLA long-term contracts with Honeywell for 2,826 parts (mechanical sites 3-year demand activity).

Need factual/data support that prices are fair and reasonable.

Project Timeline

Phase	Planned*	Actual	Status
Define	15 Jan 09	21 Jun 10	
Measure	30 Apr 09	21 Jun 10	
Analyze	31 May 09	21 Jun 10	
Improve	30 Jun 09	21 Jun 10	
Control	31 Jul 09	22 Jun 10	

* Project was suspended in April 2009 because Master Black Belt was working in Kuwait. Project restarted February 2010.

Cross-Functional Team

Define Tollgate

Team Members			
Name	Role	Affiliation	RACI*
[redacted]	**Sponsor/Champion**	**DOD OIG**	**Approver**
[redacted]	**Black Belt**	**DOD OIG**	**Responsible**
[redacted]	**Master Black Belt**	**OSD, Office of Deputy Chief Management Officer**	**Responsible**
[redacted]	**Process Owner**	**DLA Aviation/ Honeywell**	**Approver**
[redacted]	**One-Pass Pricing**	**DLA Aviation**	**Approver**
[redacted]	**Contract/Pricing Technical Advice**	**DLA Aviation**	**Approver**
[redacted]	**Compliance**	**Honeywell**	**Contributor**
[redacted]	**Contracting**	**DLA Aviation**	**Contributor**
[redacted]	**Pricing**	**Honeywell**	**Contributor**
[redacted]	**Statistical Sampling**	**DOD OIG**	**Contributor**
[redacted]	**Compliance**	**DPAP**	**Inform**
[redacted]	**Compliance**	**DLA Aviation**	**Inform**
[redacted]	**Pricing**	**Honeywell**	**Inform**

*Responsible, Approver, Contributor, or Inform

Business Impact

Define Tollgate

- This Six Sigma project is expected to determine the viability of using a one-pass pricing process to procure and sustain fair and reasonable prices for sole-source spare parts.

- The project is also expected to provide a viable methodology for repricing thousands of items on long-term contracts.

- We expect the contractor to improve efficiency based on the long-term contract arrangement, and rebaselining will result in reduced contract prices by 6–8 percent.

Measure the Problem

Measure Tollgate

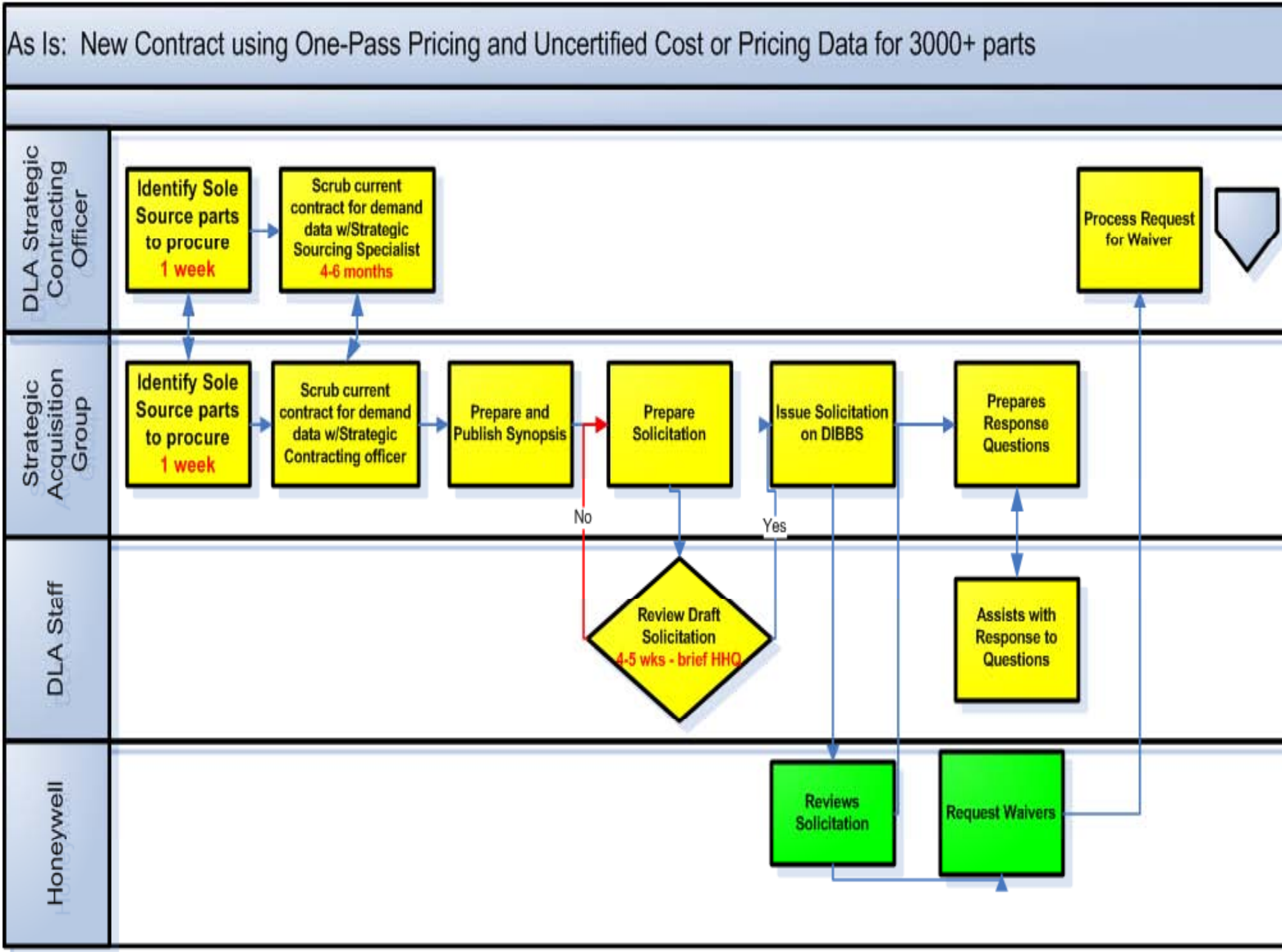
Measure	
Primary Metric	**Price fluctuation:** **Comparison of prices on current long-term contract to contract prices for sampled items after repricing (percent change)** **As-is price fluctuation averaged 21.3 percent increase from initial contract price (in about 6 years)**
Data Source	**Honeywell Sales System, DLA Requisition Data, Contract Prices, Sample**
Time Period Analyzed	**2006, 2007, and 2008 data**
Gauge Issues	**Sample selection errors**
Gauge Correction	**Further analysis of data to minimize impact. Recompute and increase sample size (Strata 4)**

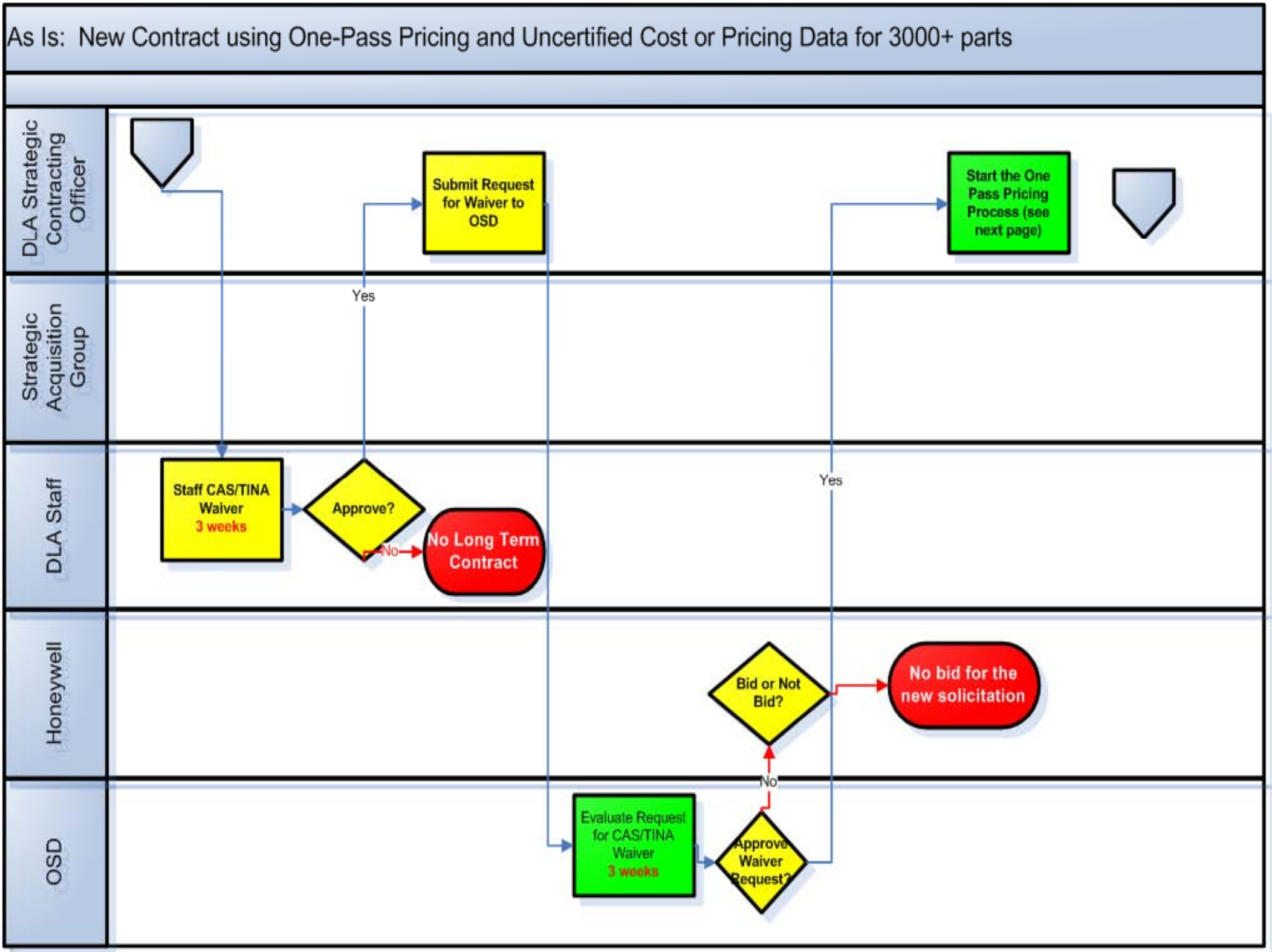
Measurement Plan	
What data collected?	**2006 through 2008 (sales) year-to-date shipped spare parts quantities and dollar values from Honeywell, DLA Office of Research and Resource Analysis (DORRA) data, OIG sample, contract prices**
Who collects/reviews?	**DoD OIG**
Where are data located?	**Honeywell and DLA**
When will data be collected?	**Preliminary data already collected; may need to verify contract prices**
What to do with data?	**Sample selected from current data and current prices for sample items will be compared to renegotiated prices**

Prices should be within +/- 15 percent of initial contract price.

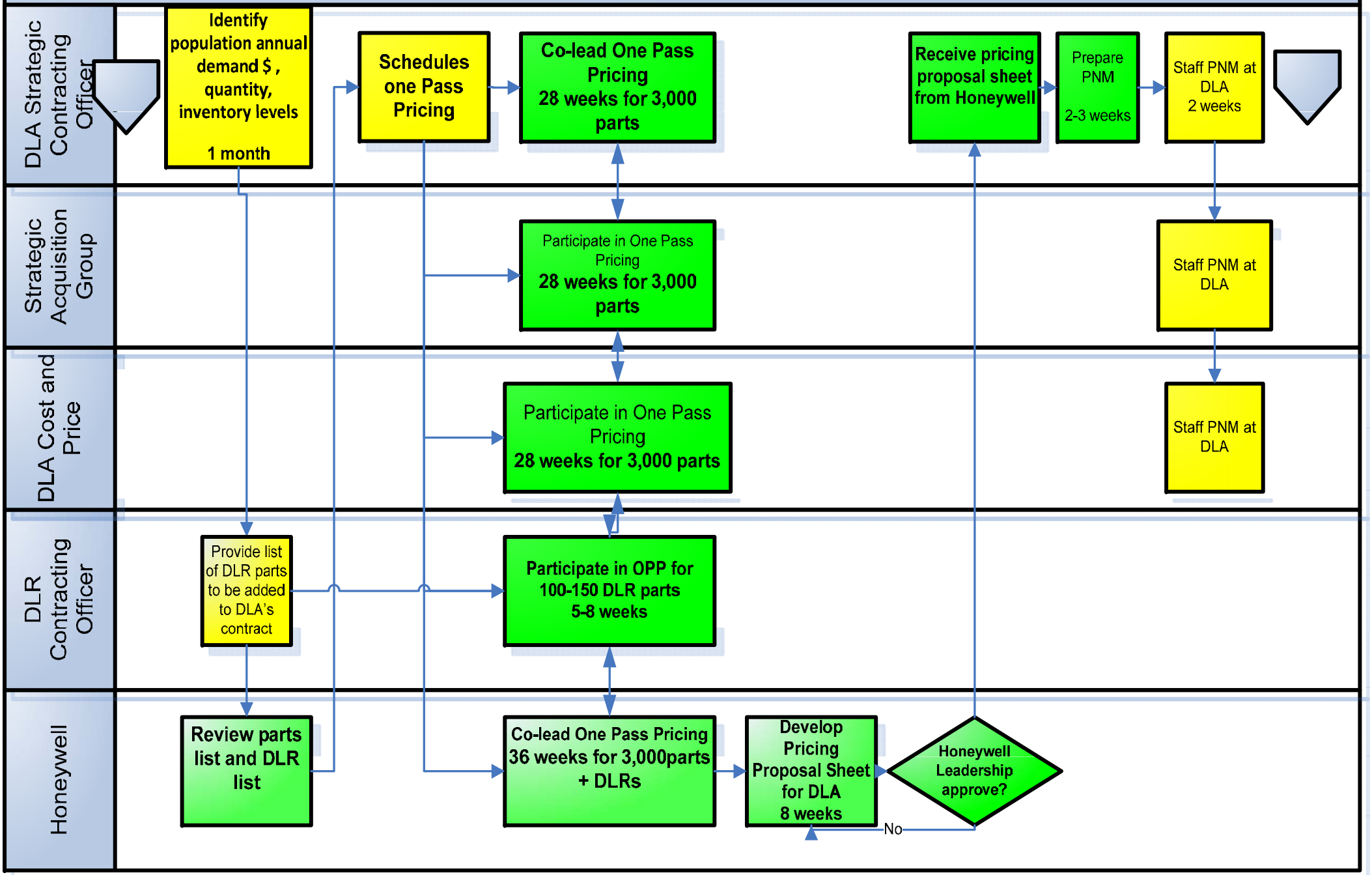
As-Is Process Map

One-Pass Pricing Without Repricing Step
and Sample Approach

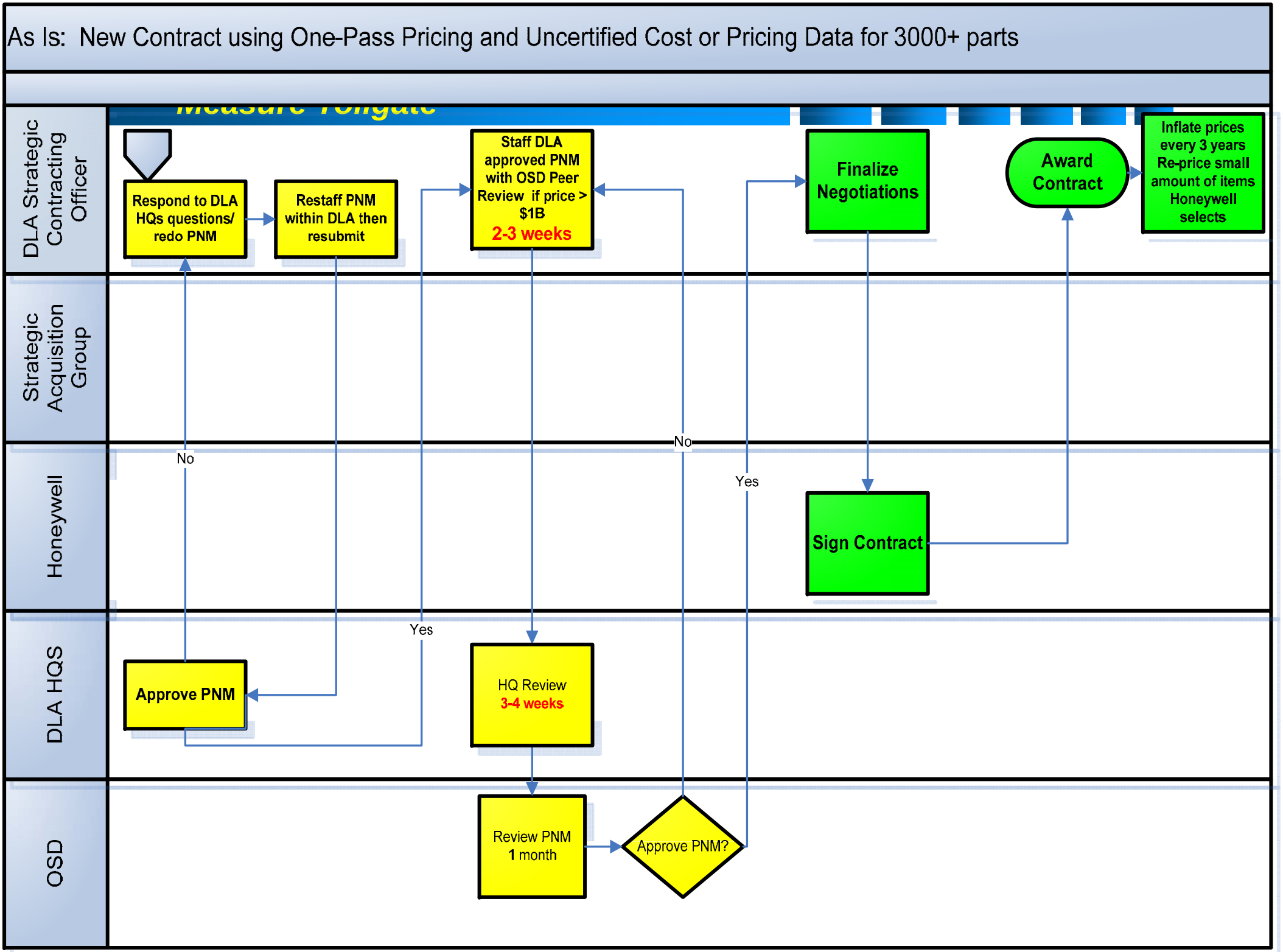

As Is: New Contract using One-Pass Pricing and Uncertified Cost or Pricing Data for 3000+ parts
DLA Strategic Contracting Officer
Strategic Acquisition Group
DLA Staff
Honeywell
Identify Sole Source parts to procure 1 week
Scrub current contract for demand data w/Strategic Sourcing Specialist 4-6 months
Process Request for Waiver
Identify Sole Source parts to procure 1 week
Scrub current contract for demand data w/Strategic Contracting officer
Prepare and Publish Synopsis
Prepare Solicitation
Issue Solicitation on DIBBS
Prepares Response Questions
No
Yes
Review Draft Solicitation 4-5 wks - brief HHQ
Assists with Response to Questions
Reviews Solicitation
Request Waivers


As Is: New Contract using One-Pass Pricing and Uncertified Cost or Pricing Data for 3000+ parts
DLA Strategic Contracting Officer
Strategic Acquisition Group
DLA Staff
Honeywell
OSD
Submit Request for Waiver to OSD
Start the One Pass Pricing Process (see next page)
Yes
Staff CAS/TINA Waiver
3 weeks
Approve?
No
No Long Term Contract
Yes
Bid or Not Bid?
No bid for the new solicitation
No
Evaluate Request for CAS/TINA Waiver
3 weeks
Approve Waiver Request?

As Is: New Contract using One-Pass Pricing and Uncertified Cost or Pricing Data for 3000+ parts



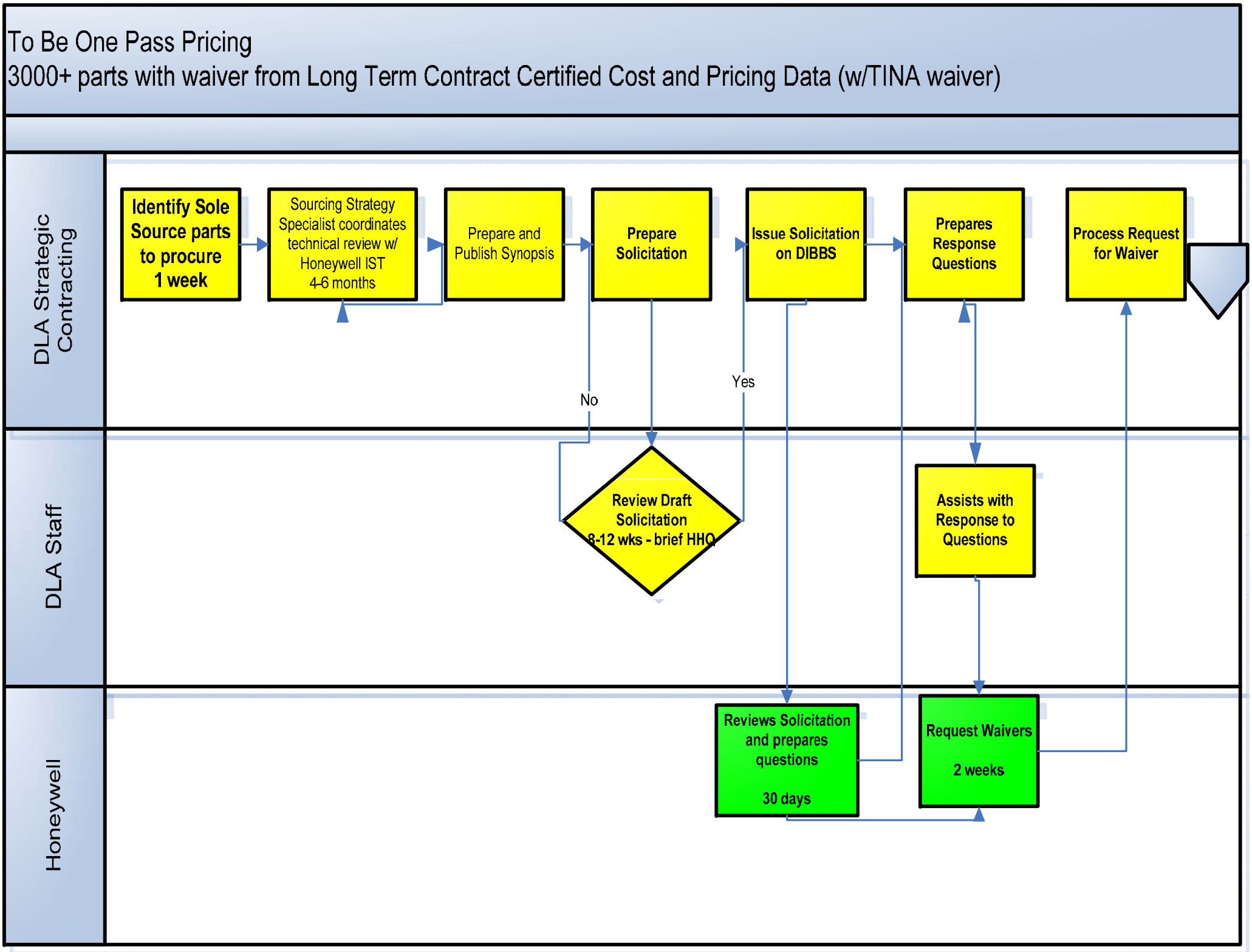
As Is: New Contract using One-Pass Pricing and Uncertified Cost or Pricing Data for 3000+ parts



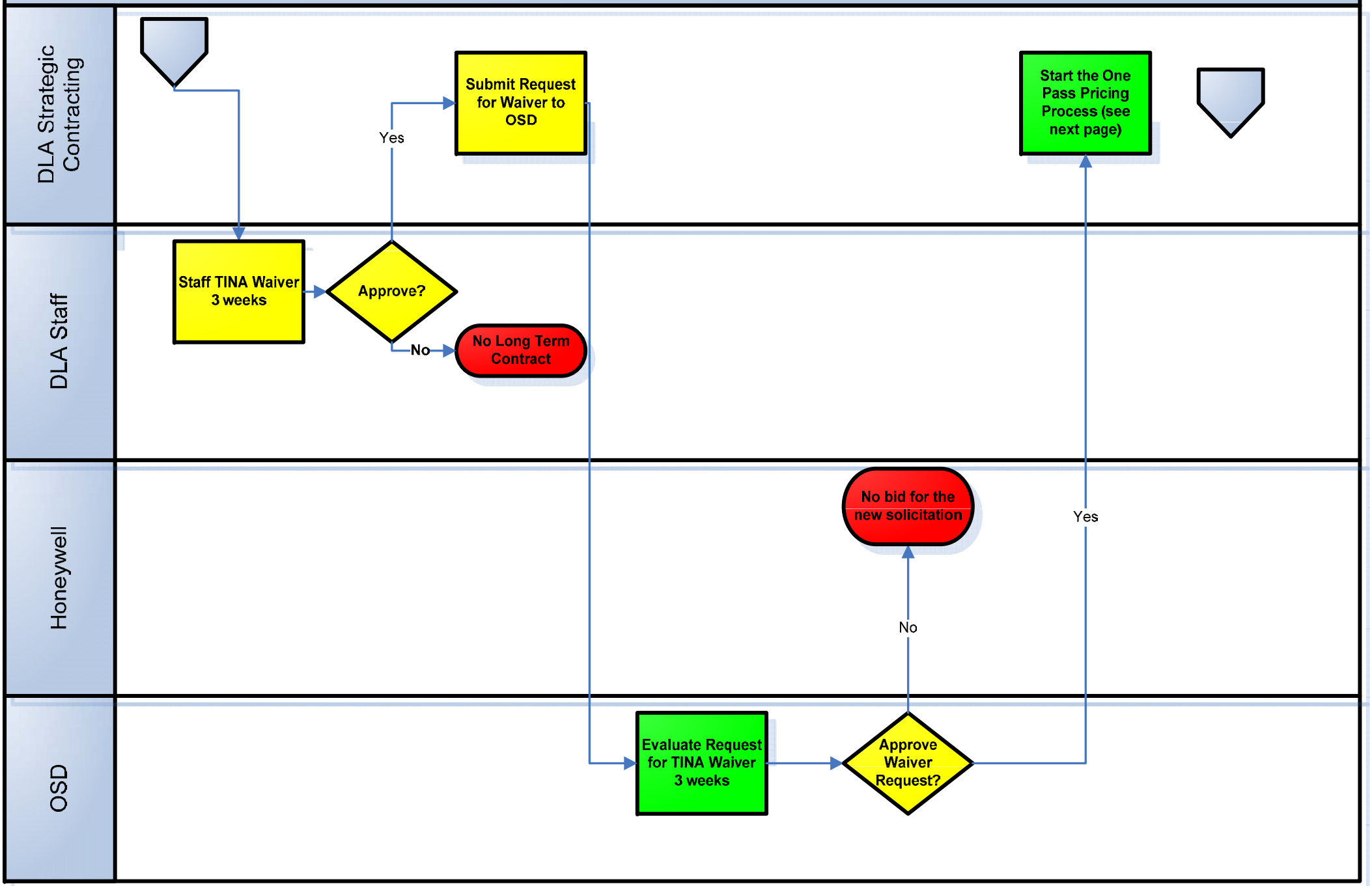
To-Be Process Map

One-Pass Pricing With Repricing Step
and Sample Approach

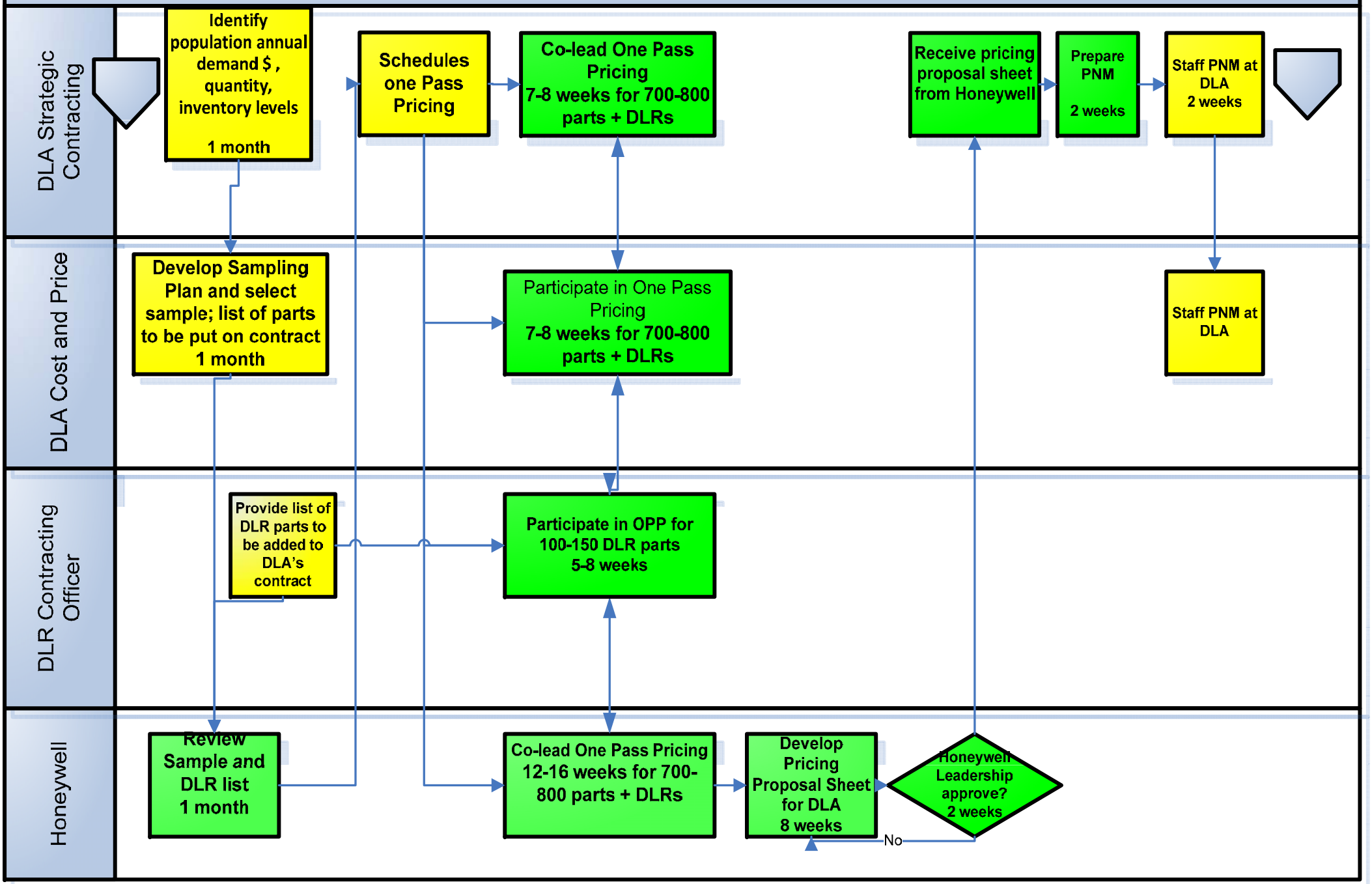
To Be One Pass Pricing
3000+ parts with waiver from Long Term Contract Certified Cost and Pricing Data (w/TINA waiver)

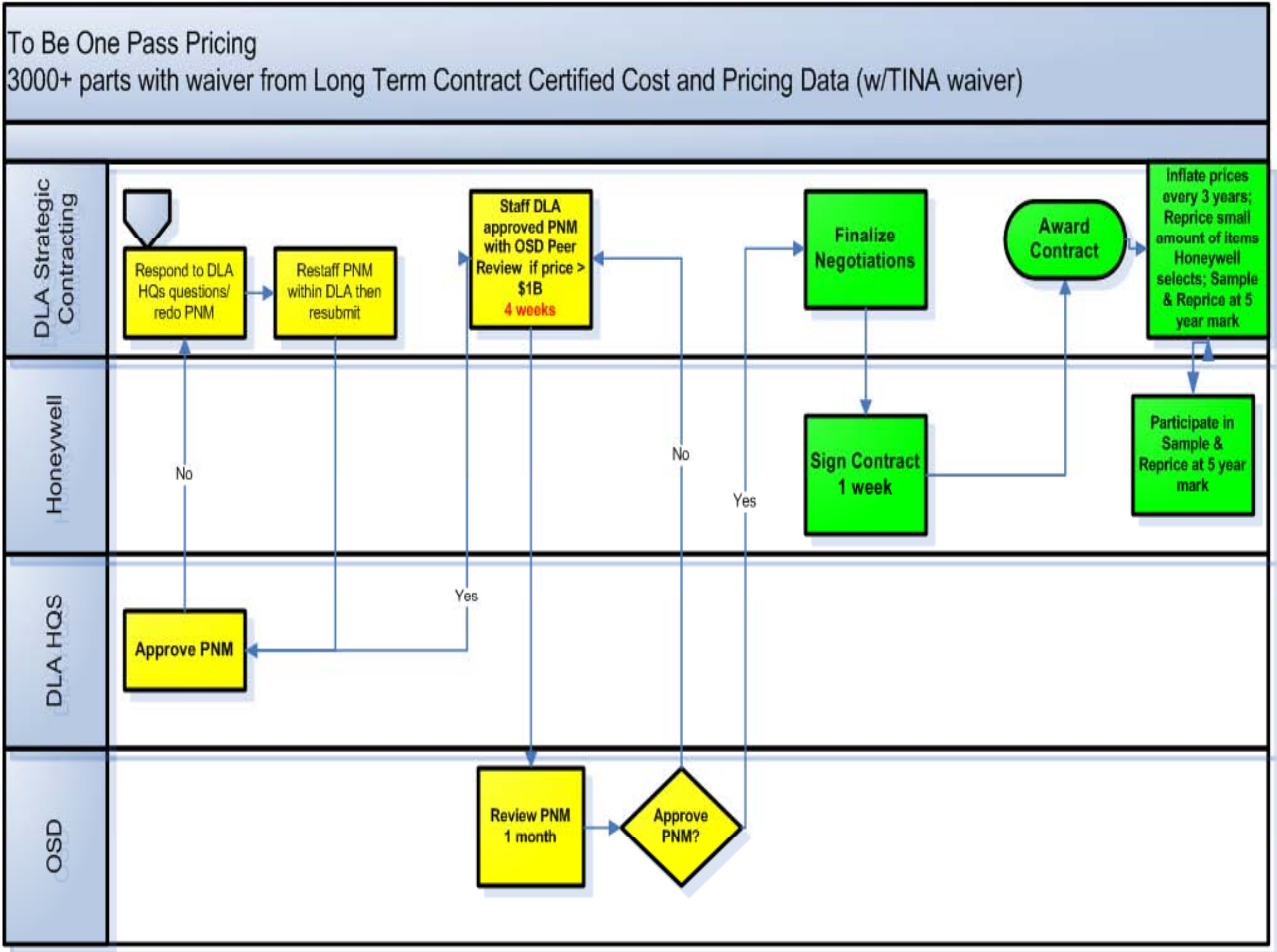


To Be One Pass Pricing
3000+ parts with waiver from Long Term Contract Certified Cost and Pricing Data (w/TINA waiver)



To Be One Pass Pricing
3000+ parts with waiver from Long Term Contract Certified Cost and Pricing Data (w/TINA waiver)




To Be One Pass Pricing
3000+ parts with waiver from Long Term Contract Certified Cost and Pricing Data (w/TINA waiver)
DLA Strategic Contracting
Honeywell
DLA HQS
OSD
Respond to DLA HQs questions/ redo PNM
Restaff PNM within DLA then resubmit
Staff DLA approved PNM with OSD Peer Review if price > $1B
4 weeks
Finalize Negotiations
Award Contract
Inflate prices every 3 years; Reprice small amount of items Honeywell selects; Sample & Reprice at 5 year mark
Sign Contract 1 week
Participate in Sample & Reprice at 5 year mark
Approve PNM
Review PNM 1 month
Approve PNM?
No
Yes
No
Yes

Operational Definitions

Measure Tollgate

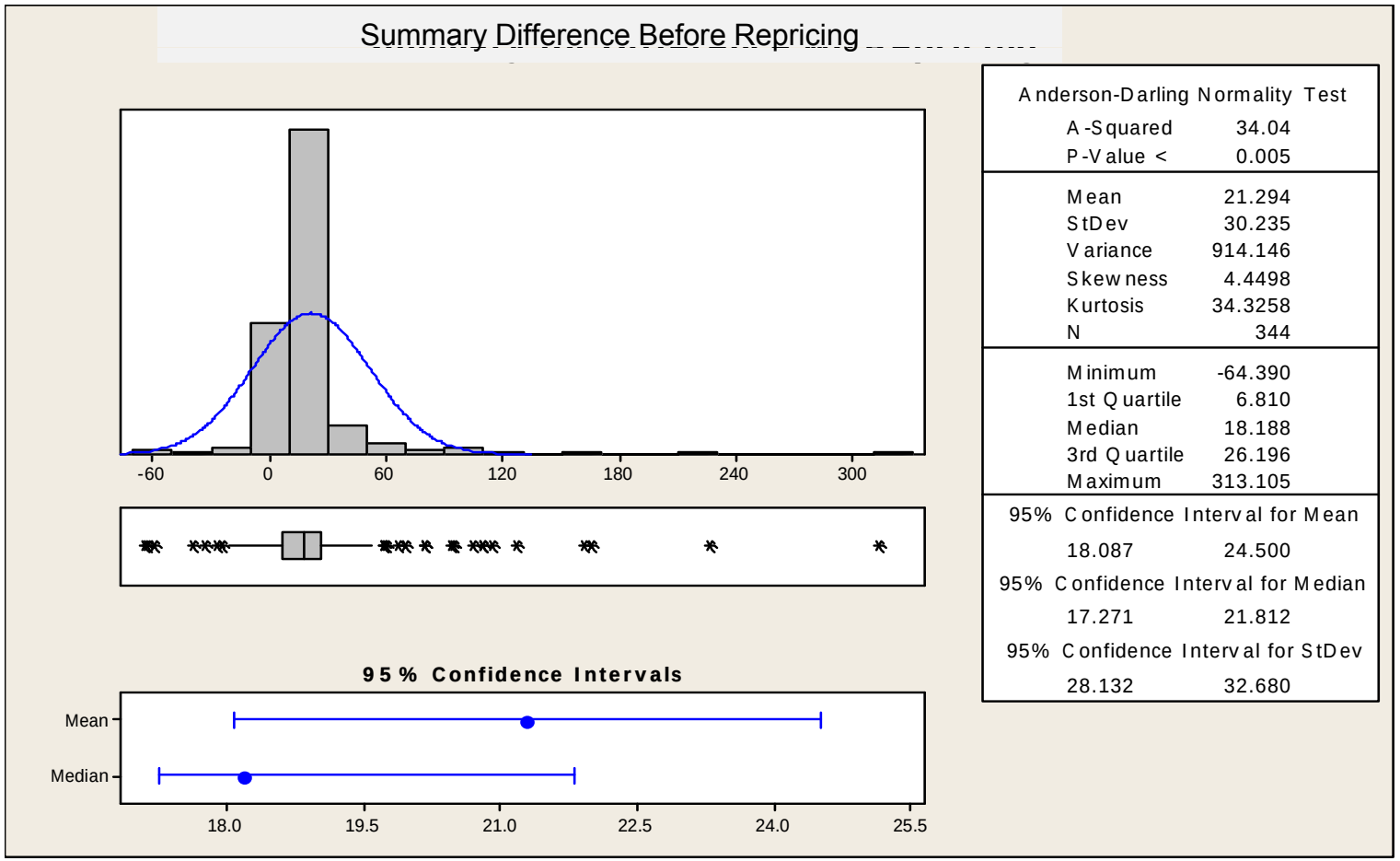
- Fair and reasonable price – A price calculated based on Honeywell's cost and negotiated profit and service fees.

- One-pass pricing – A collaborative, real-time review of proposal costs to establish fair and reasonable price by Honeywell program managers and pricers, DLA contracting officers and cost/price analysts, and other appropriate support organizations.

As-Is Process Baseline Summary

Measure Tollgate

- The As-Is Process has a non-normal distribution with the P-value <0.05.
- The mean is 21.294 percent, and the median is 18.188 percent.
- The range is 377.495, and the standard deviation is 30.235.
- At a 95 percent confidence level, the average price has increased between 18.087 and 24.500 percent.
- The increase in prices shows that a repricing mechanism is needed in future contracts.



Anderson-Darling Normality Test	
A-Squared	34.04
P-Value <	0.005
Mean	21.294
StDev	30.235
Variance	914.146
Skewness	4.4498
Kurtosis	34.3258
N	344
Minimum	-64.390
1st Quartile	6.810
Median	18.188
3rd Quartile	26.196
Maximum	313.105
95% Confidence Interval for Mean	
18.087	24.500
95% Confidence Interval for Median	
17.271	21.812
95% Confidence Interval for StDev	
28.132	32.680

Part prices have increased 21.294 percent (mean) since the initial contract price, due to escalation indices.

Note: Please refer to Appendix B for definitions of statistics shown on this page.

As-Is Process Defects Per Opportunity

Measure Tollgate

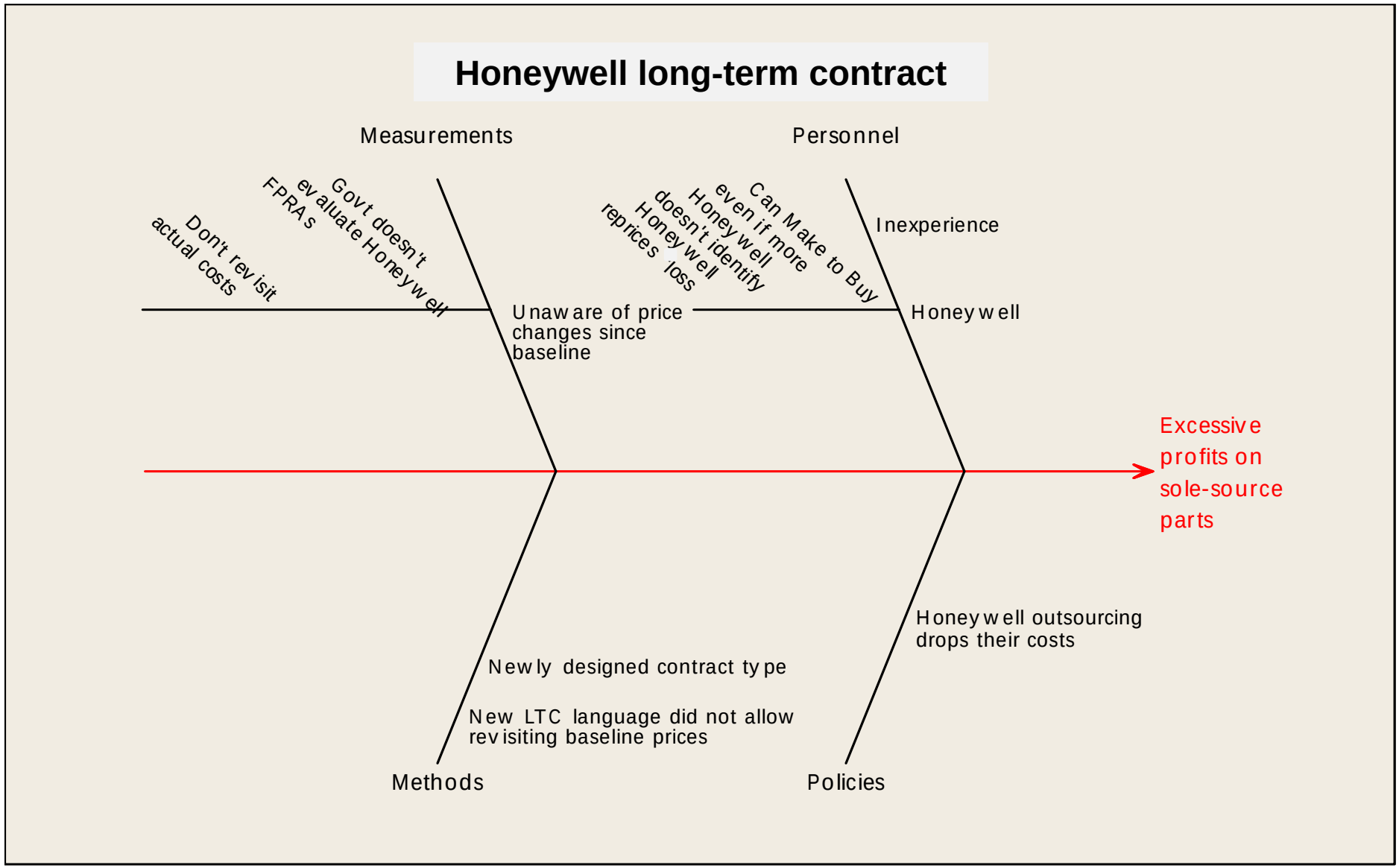
We measured the defects (price has experienced more than 15 percent increase or decrease) per opportunity (DPO) and found that only 40 percent of the As-Is Process was performing within specification limits (yield) while roughly 60 percent was outside of the parameters, or a defect. As a result, a repricing mechanism in the process is needed to improve control of spare part prices.

Sigma Level - Before Repricing		
Total Opportunities	344	
Total Defects	206	
DP10K Score	5,988	DP10K Score
Yield	40%	Yield
DPO	0.5988	DPO
DP10K	5988.4	DP10K
Sigma	1.250	Sigma

Note: Please refer to Appendix B for definitions of statistics shown on this page.

Excessive-Profits Fishbone

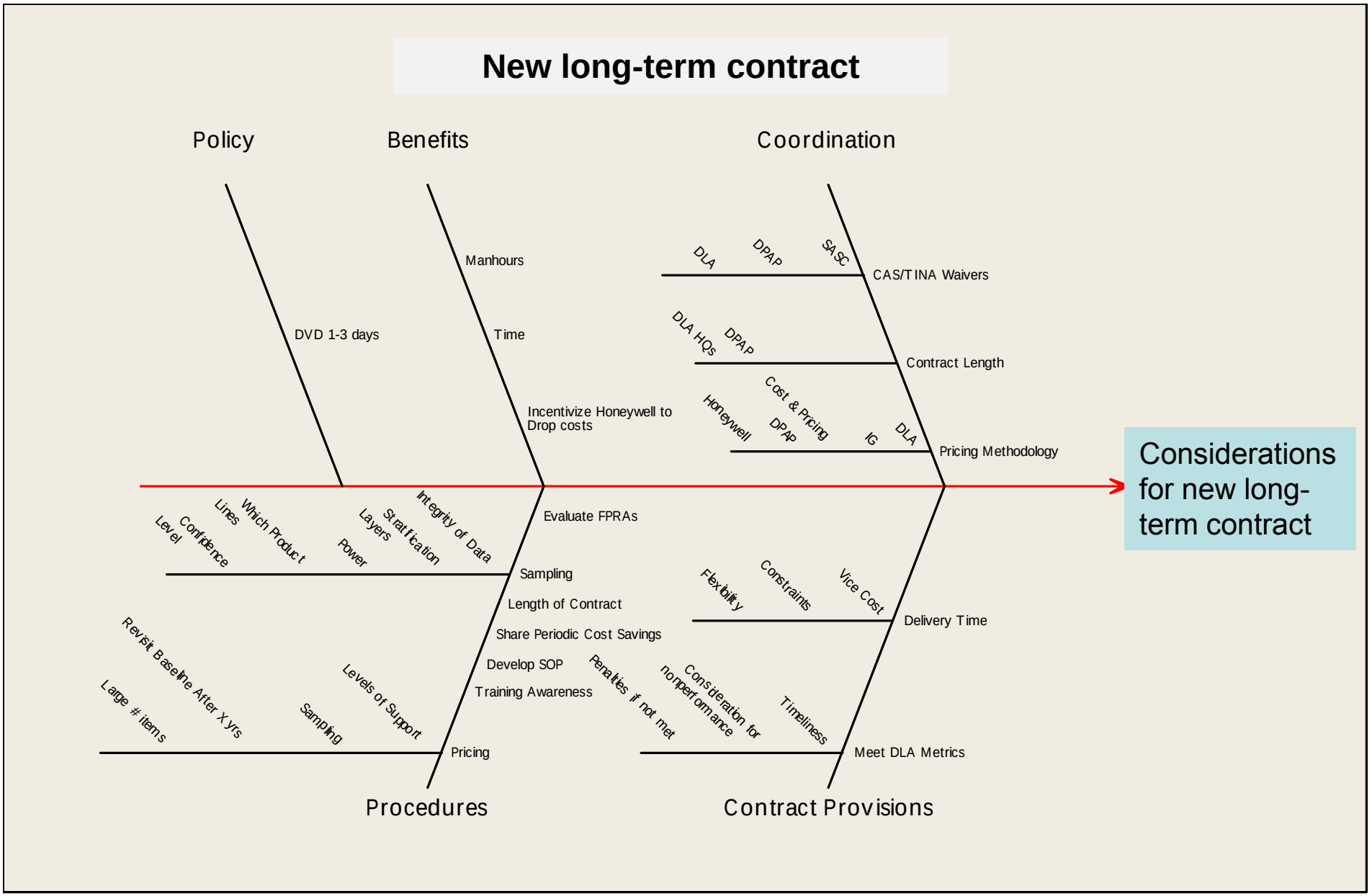
Analyze Tollgate



Note: A fishbone is a tool used to identify possible causes of a problem by representing a relationship between some effect and its possible cause.

Considerations for New Long-Term Contract Fishbone

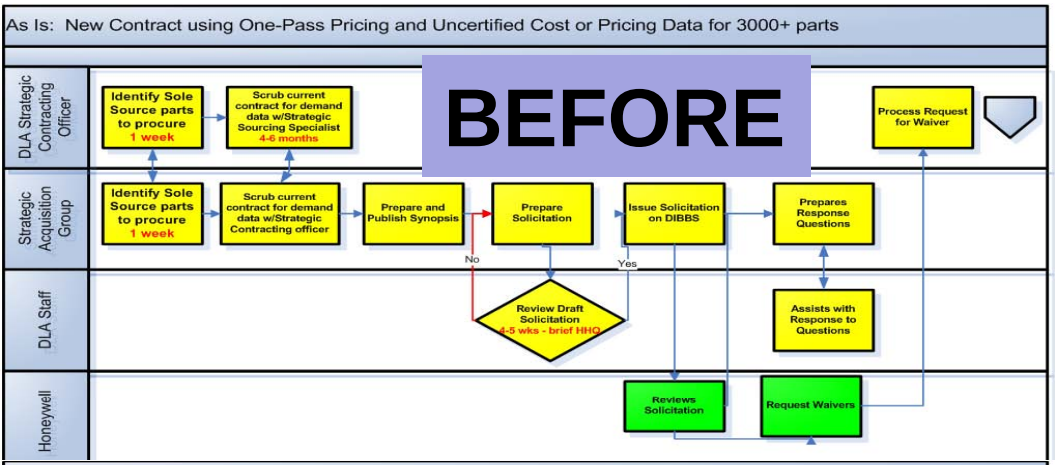
Analyze Tollgate



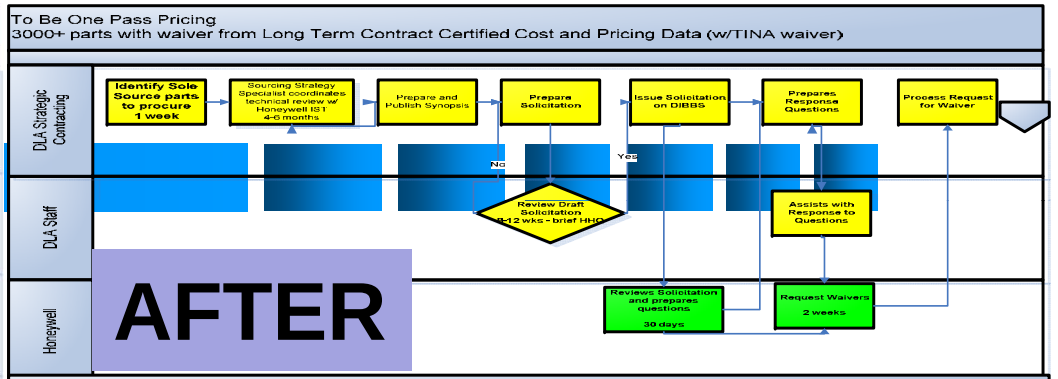
Mistake Proofing the Process

Improve Tollgate

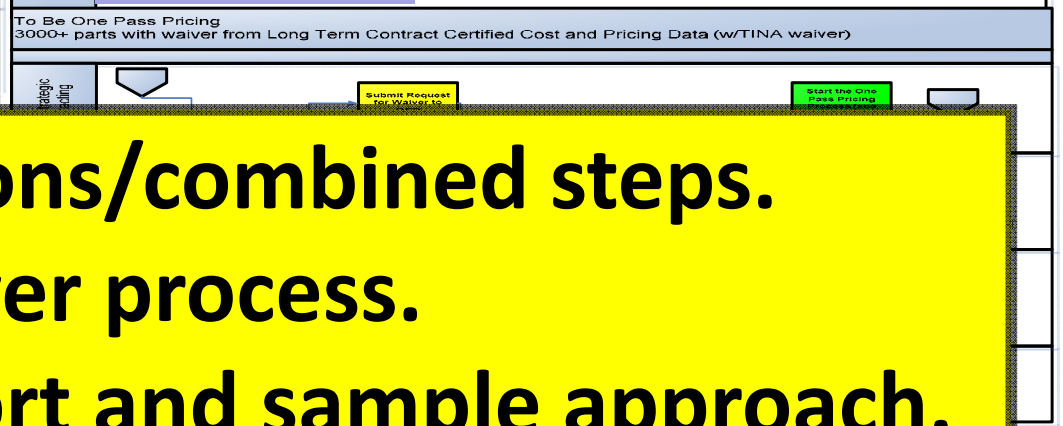
- Solutions:
  - Before adding parts to the contract, match Honeywell historical sales data to DLA historical demand and forecasted demand data and review current inventory levels (Step 2 Honeywell SOP and Step 4 DLA SOP).
    - Will prevent negotiating prices for parts that will not be purchased.
    - Will ensure proper usage is considered when negotiating prices.
    - Will improve detection of system automatic ordering errors *(identified and canceled $3.2 million of overprocured orders).*
  - When selecting the sample, validate that means for the sample and population are within an appropriate range. If not, increase sample size to minimize the risk of sampling error. Ensure that the confidence level of the sample is appropriate (90 or 95 percent). Incorporate IG input to the sample selection. DLA-Honeywell agree to sample methodology. Recommended approach to select parts to price is 100 percent of high-dollar parts; random sample 50 percent of the mid-to-high-dollars parts; random sample 33 percent of the low-to-mid-dollar parts; and random sample 20 percent of the low-dollar items (Step 3 Honeywell SOP and Step 5 DLA SOP).
    - Will minimize sampling error.
  - To ensure accurate pricing worksheets, Honeywell will provide to DCMA to verify rates and profit before OPP sessions (Negotiated Forward Pricing Rates Agreements – Step 4 Honeywell SOP and Step 9 DLA SOP).
  - To minimize errors with Honeywell cost data, DLA will request a DCMA/DCAA review of Honeywell's cost-estimating system before next contract or repricing. Review most recent report to determine whether the system is approved and become aware of any problems (Step 7 DLA SOP).
  - To ensure negotiated prices are correct, a DLA cost/price analyst will review final price worksheets (Step 9 DLA SOP).
  - OSD will peer review the contract length and terms if over $1 billion (September 29, 2008, memorandum, Defense Procurement and Acquisition Policy).



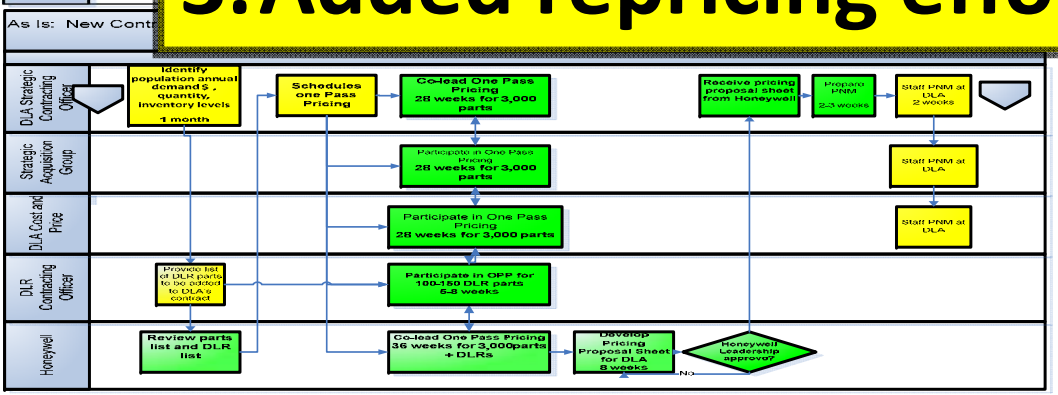
BEFORE

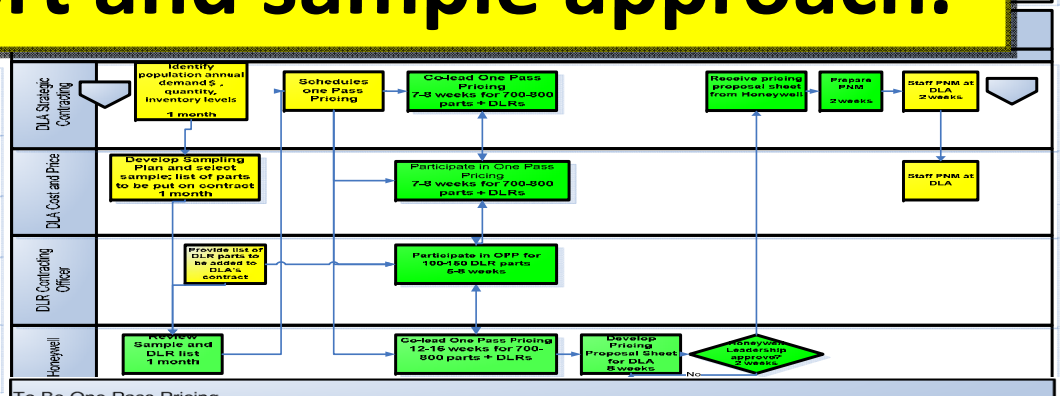


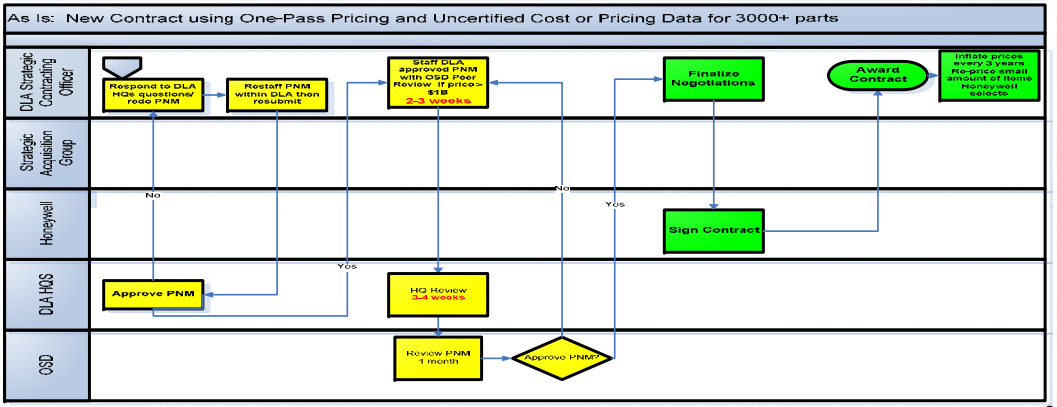
AFTER

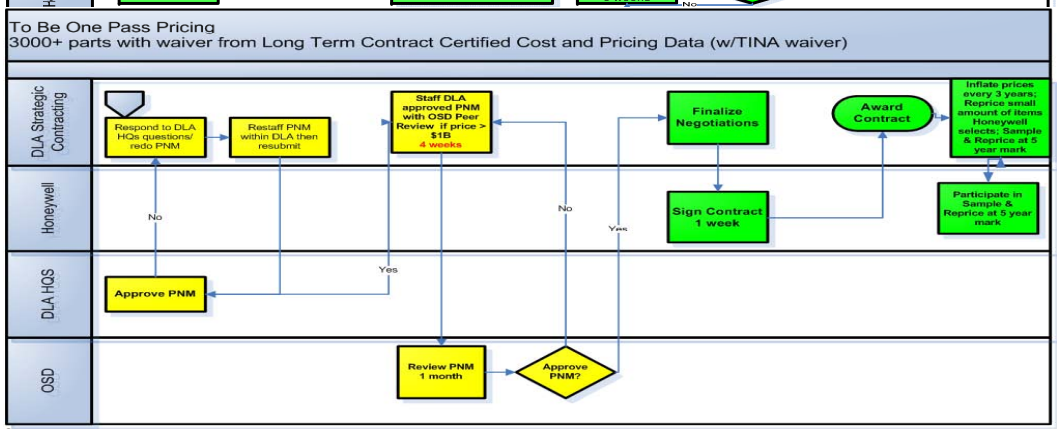


1. Consolidated functions/combined steps.
2. Eliminated CAS waiver process.
3. Added repricing effort and sample approach.



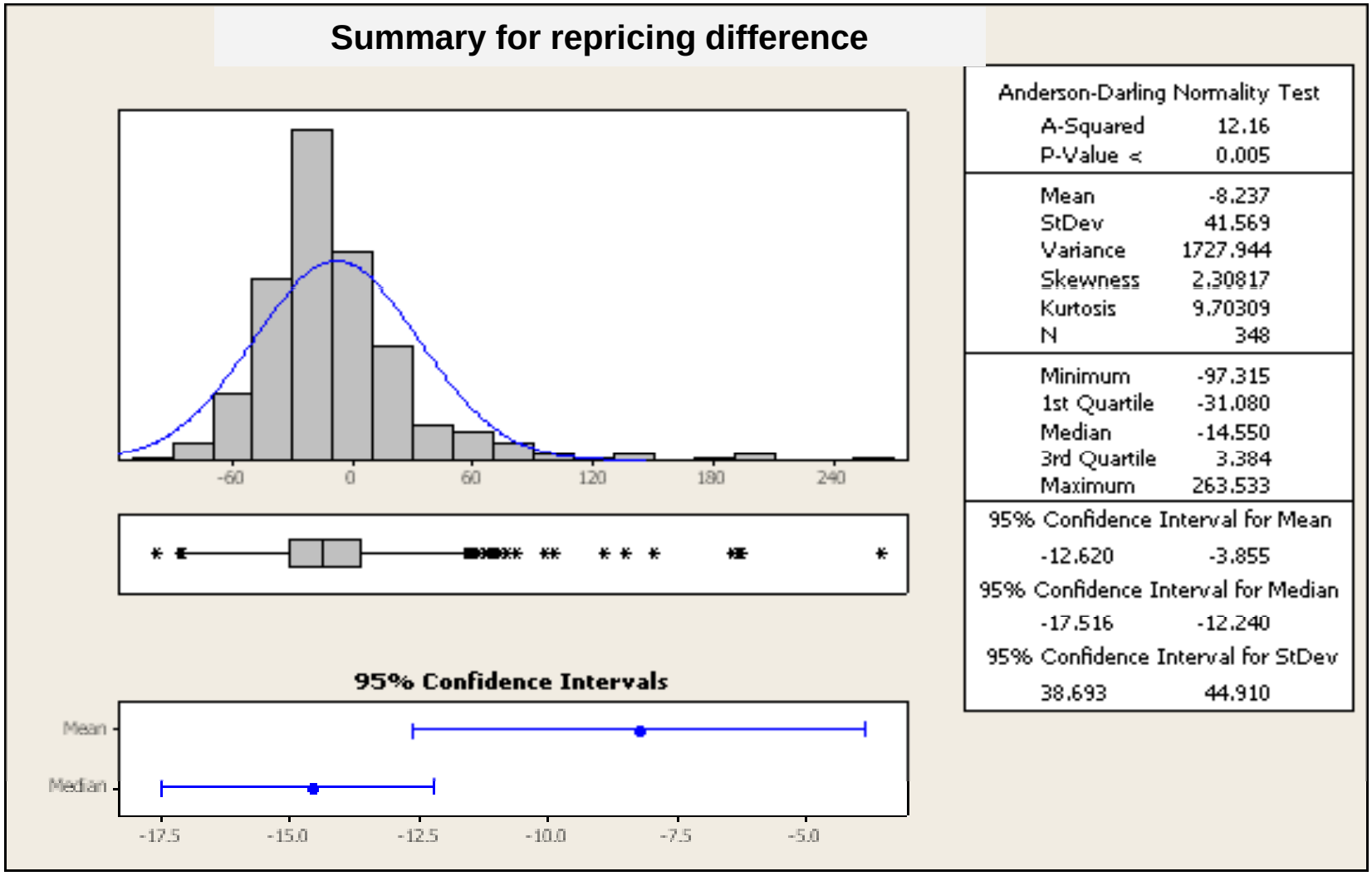






Baseline Summary After Repricing

Improve Tollgate



Anderson-Darling Normality Test	
A-Squared	12.16
P-Value <	0.005
Mean	-8.237
StDev	41.569
Variance	1727.944
Skewness	2.30817
Kurtosis	9.70309
N	348
Minimum	-97.315
1st Quartile	-31.080
Median	-14.550
3rd Quartile	3.384
Maximum	263.533
95% Confidence Interval for Mean	
-12.620	-3.855
95% Confidence Interval for Median	
-17.516	-12.240
95% Confidence Interval for StDev	
38.693	44.910

Individual part prices were reduced on average 8.237 percent (mean). In total, prices were reduced by 9.4 percent or $9.5 million.

Note: Please refer to Appendix B for definitions of statistics shown on this page.

What Results Did We See?

Improve Tollgate

After repricing, prices were reduced, and the process had improved control of spare part prices as the yield increased from 40 to 82 percent and DPO decreased from 60 to 17.5 percent.

Total Defects Before Repricing

Sigma Level - Before Repricing		
Total Opportunities	344	
Total Defects	206	
DP10K Score	5,988	DP10K Score
Yield	40%	Yield
DPO	0.5988	DPO
DP10K	5988.4	DP10K
Sigma	1.250	Sigma

Total Defects After Repricing

Sigma Level		
Total Opportunities	348	
Total Defects	61	
DP10K Score	1,753	DP10K Score
Yield	82%	Yield
DPO	0.1753	DPO
DP10K	1752.9	DP10K
Sigma	2.433	Sigma

Key Metrics	Before	After	Delta
Total Prices (excluding inflation)	21.3% Increase	11.9% Increase	-55.9%
Price Increases above 15%	59.88%	17.53%	-42.35%
Price Decreases more than 15%	2.33%	49.14%	+46.81%

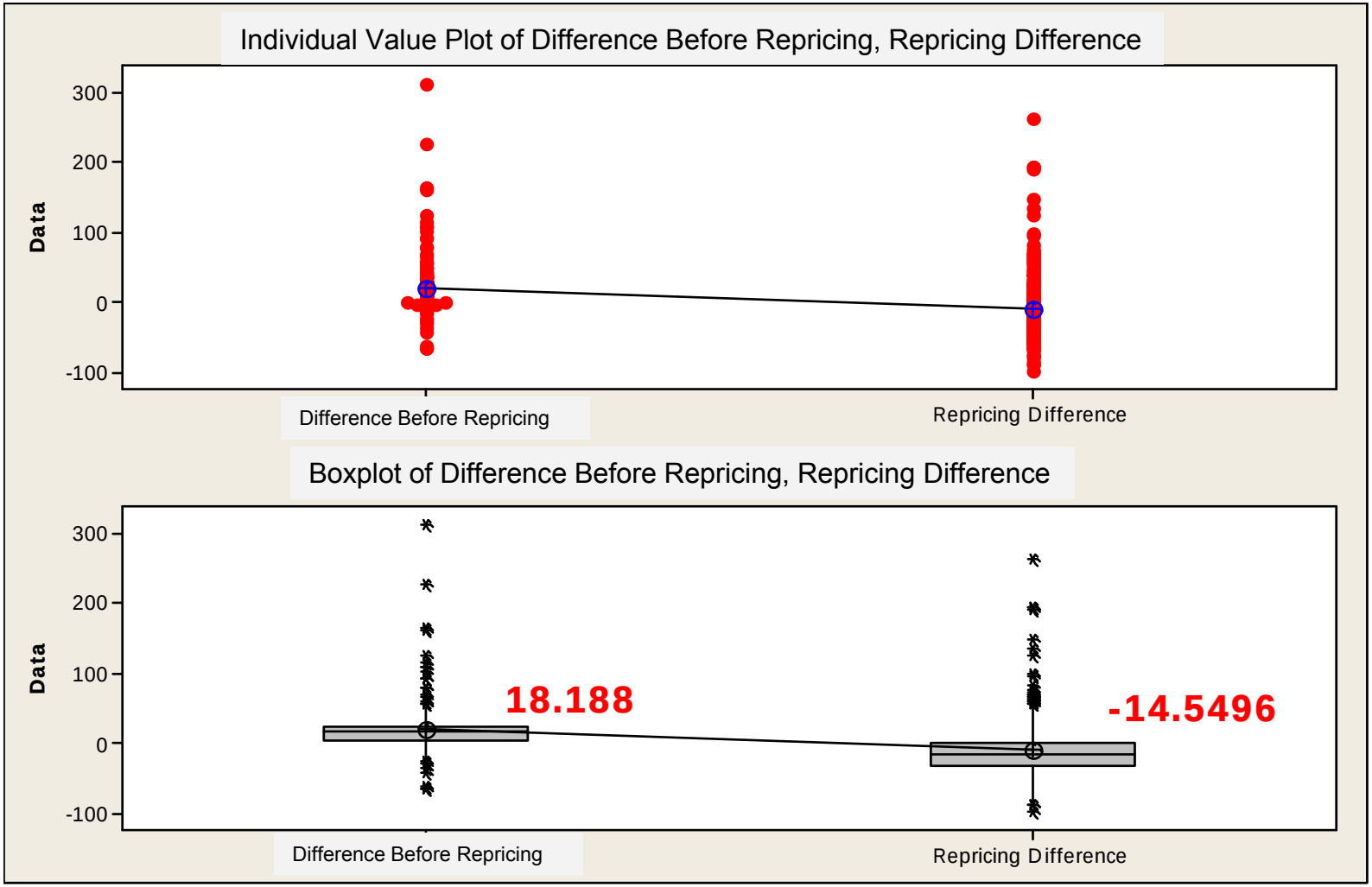
Adding a repricing clause to the long-term contract has improved the process and reduced DOD prices for spare parts.

Note: Please refer to Appendix B for definitions of statistics shown on this page.

Comparison of Before and After Results

Improve Tollgate

After repricing, the median change in prices was a reduction of more than 14.5 percent for the 348 sample items.



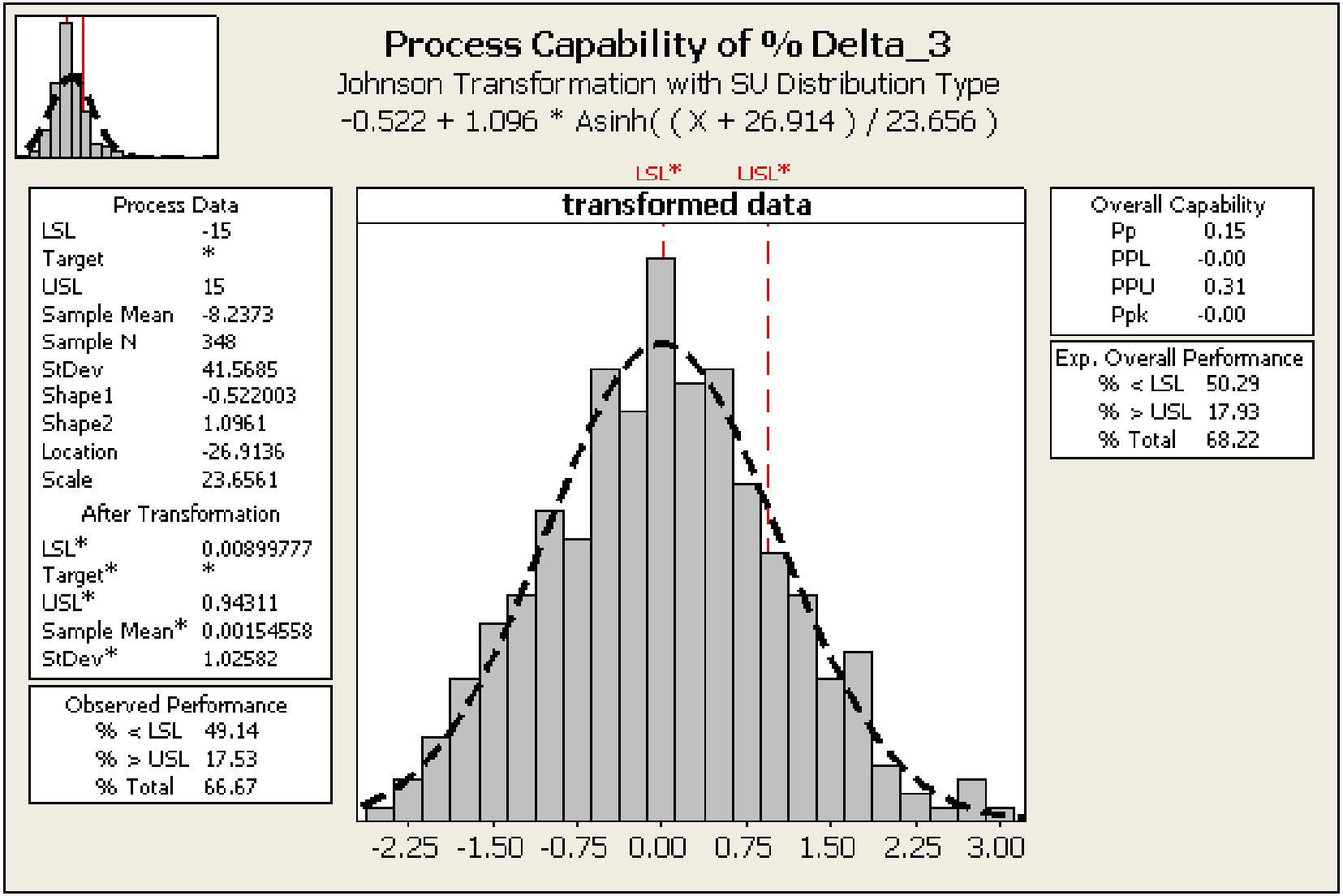
Outliers warrant investigation – price fluctuations are not stable.

Note: Please refer to Appendix B for definitions of statistics shown on this page.

Sample Results – Johnson Transformation

Improve Tollgate

The process capability analysis shows that the majority of prices were reduced during the repricing effort. The observed performance shows that 49 percent of the items were reduced by more than 15 percent, while only 17.5 percent had increased more than 15 percent.



Note: Please refer to Appendix B for definitions of statistics shown on this page.

Process Control/Reaction Plan

Control Tollgate

PROJECT NAME DLA-Honeywell Long-term Contract		BLACK BELT [redacted]	DATE 4/12/2010
PROJECT SPONSOR [redacted]		MASTER BLACK BELT [redacted]	

Control Action Number	Control Action	Responsible Individual	Applicable Control Charts and Metrics					
			Freq.	Process Step	Target Value	Upper Control Limit	Lower Control Limit	Reaction Plan
1	Complaints from other suppliers (synopsis, award)	SCG	During award process	Identify Sole-Source Parts	0.0	1.0	0.0	Evaluate complaint, if valid remove item from contract.
2	Tracking timeline for procurement/reviews	SCG	During pre-award process	Review Solicitation	100.0			Determine where the document stands in the approval process. Adjust milestones and followup.
3	FAR/DPAP guidance	SCG	During pre-award process	Staff/approve TINA Waiver	100.0	1.0	0.0	Re-evaluate contract strategy.
4	Reconciliation of forecast and demand	SCG/Hon	Prior to OPP session	Identify items to price	100.0			Resolve discrepancies before one-pass pricing sessions, remove, or move items to future sessions.
	Random Sample /review Honeywell	DLA analyst	Before repricing items	Sample Plan	100.0			Verify that there is no significant sampling error and selection plan is statistically sound. Obtain IG assistance if necessary.
5	Track timeline	SCG	Every procurement until award is made	Review PNM/Award Package	100.0			Correct for noted errors in documentation and resubmit.
6	Do a new sample (what triggers)	SCG	Every 5 years or as contract requires	Reprice items	100.0			Ensure sampling is adequate and accurate and appropriate coverage of high-dollar items.
7	Contract coverage (desired outcome)	SCG	Prior to placing these items on contract	High-risk (low/no demand) items	100.0			Re-evaluate contract strategy for these items.

Standard Operating Procedures and Training Plans

Control Tollgate

Standard Operating Procedures (SOPs)

SOPs Requiring Revision	Responsible	Status
Honeywell SOP	Lead: [redacted]	Completed (June 2010)
DLA SOP	Lead: [redacted]	Completed (June 2010)

Training Plans

Required Training	Responsible	Status
DLA on-the-job one-pass pricing training (send senior experienced leaders out with junior contracting professionals)	[redacted]	Ongoing (continual)
Cross train	[redacted]	All pricers have taken training or actually performed one-pass pricing sessions

Updated Benefits Estimate

Control Tollgate

Metric	Baseline	Objective	Achieved
Cycle Time	36 weeks for one-pass pricing process for 3,000 items	Not defined	20-24 week reduction in one-pass pricing process
Cost Avoidance (reduced prices)	21 percent increase due to escalation	6-8 percent reduction	$9.5 million (9.4 percent reduction)
Cost Savings (Overprocured Orders)	$5.1 million of orders were identified	$5.1 million	$3.2 million of orders were canceled
Price Reductions > 15 percent	2 percent of items (60 percent higher)	Not defined	49 percent (17 percent higher)

Additional Benefits/Comments

- DLA reduced administrative lead times 84 percent to 9 days and Honeywell cut general and administrative rates almost in half.
- The process was more in control and prices were stabilized by adding a repricing clause to the contract.
- The one-pass pricing process was validated as a viable method to procure and sustain fair and reasonable prices for sole-source spare parts. Overall, prices have increased less than the inflation rate.

The DoD Lean Six Sigma Tollgate

Define	Measure	Analyze	Improve	Control
☑ Project Charter	☑ Project Charter	☑ Project Charter	☑ Project Charter	☑ Project Charter
☑ Project Timeline	☑ VSM/Detailed process map	☑ Measure Overview	☑ Measure Overview	☑ Measure Overview
☑ Business Impact	☑ SIPOC w/Metrics	☐ Process Constraint ID Analysis[2]	☑ Analyze Overview	☑ Analyze Overview
☑ Cross Functional Team	☑ Operational Definitions	☑ Cause and Effect Diagram	☑ FMEA	☑ Improve Overview
☑ Replication Check	☑ Data Coll Plan	☑ XY Matrix	☑ Mistake-Proofing	☐ Control Plan
☑ Strategic Alignment	☑ Control Chart	☐ Pareto Plot Analysis[3]	☐ Visual Workplace Tools[5]	☑ SOP/Training Plan
☑ High level Process Map	☑ CTQ/CTP [4]	☑ FMEA	☑ As Is vs To Be Process Map	☑ Updated Benefits
☑ SIPOC	☑ MSA	☐ Hypothesis Test Summary[2]	☐ Pilot Plan[3]	☐ Estimate Future Projects Identified[3]
☑ Measurable Y	☐ MSA 6Pack[3]	☐ Root Cause Verification[2]	☐ Pilot Results[3]	☑ Project Replication
☑ VOC/VOB	☑ As Is Baseline Statistics	☐ Linear Regression[2]	☐ Revised Control Chart[2]	☐ PR EXSUM[6]
☐ Stakeholder Analysis[1]	☑ As Is Process Capability	☐ Analyze Storyboard[3]	☑ Revised Capability Analysis	☐ Control Storyboard[3]
☐ Communication Plan[2]	☐ Storyboard[3]		☐ MGPP[3]	☐ SIPOC[7]
☐ Risk Analysis & Mitigation[2]			☑ Implementation Plan	☐ Cross Functional Team[7]
☐ Define Storyboard[3]			☑ Solution Selection Matrix	☐ Before/After Process Map[7]
			☐ Improve Storyboard[3]	☐ What Results Did We See?[7]

Certification projects must show measurable results

I accept the Define Tollgate. Signed:	I accept the Measure Tollgate. Signed:	I accept the Analyze Tollgate. Signed:	I accept the Improve Tollgate. Signed:	I accept the Control Tollgate. Signed:
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
(Sponsor/Champion)	(Sponsor/Champion)	(Sponsor/Champion)	(Sponsor/Champion)	(Sponsor/Champion)
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
(Process Owner)	(Process Owner)	(Process Owner)	(Process Owner)	(Process Owner)
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
(MBB)	(MBB)	(MBB)	(MBB)	(MBB)
[redacted]		[redacted]		[redacted]
(Finance Owner)		(Finance Owner)		(Finance Owner)

Note: Footnotes on this page are part of the DoD LSS Program Office templates and are not relevant to this report.

Appendix A. Acronyms and Abbreviations

CAS	Cost Accounting Standards
CPI	Continuous Process Improvement
DCAA	Defense Contract Audit Agency
DCMA	Defense Contract Management Agency
DCMO	Office of the Deputy Chief Management Officer
DIBBS	DLA Internet Bid Board System
DLA	Defense Logistics Agency
DLR	Depot-Level Repairable
DMAIC	Define-Measure-Analyze-Improve-Control
DORRA	DLA Office of Research and Resource Analysis
DPAP	Defense Procurement and Acquisition Policy
DVD	Direct Vendor Delivery
FPRA	Forward Pricing Rate Agreements
Freq	Frequency
Gov't	Government
Hon	Honeywell
HQ	Headquarters
IG	Inspector General
IST	Integrated Supplier Team
LSS	Lean Six Sigma
LTC	Long-Term Contract
OIG	Office of Inspector General
OPP	One-Pass Pricing
OSD	Office of the Secretary of Defense
PNM	Price Negotiation Memorandum
RACI	Responsible, Approver, Contributor, or Inform
SASC	Senate Armed Services Committee
SCG	Strategic Contracting Group
SOP	Standard Operating Procedures
SSA	Strategic Supplier Alliance
TINA	Truth in Negotiations Act

Appendix B. Statistical Definitions

A-squared – The measure of how closely a data set follows the normal distribution.

Boxplot – A basic graphing tool that displays centering, spread, and distribution of a continuous data set.

Confidence Interval(CI)/Level – The degree of certainty that a statistical prediction is accurate.

Defects per Opportunity (DPO) – Total number of defects / total number of opportunities.

DP10K – Defects per 10,000 opportunities.

Fishbone – A tool used to solve quality problems by brainstorming causes and logically organizing them by branches.

Johnson Transformation – A system to transform nonnormal data to a normal form.

Kurtosis – The measure of the degree of distribution from both sides of a bell curve.

Lower Specification Limit (LSL) – Deviation below the target that is permitted to operate within the normal process parameters.

Maximum – The largest number in a set.

Mean – The average of a set of value.

Median – The middle value of an ordered set of values.

Minimum – The smallest number in a finite set of numbers.

N – Sample size.

P (Probability) Value – A calculation to determine if results are caused by chance.

Pp – A simple, straightforward indicator of process performance.

Ppk – Process Performance Index. Adjustment of Pp for the effect of noncentered distribution.

PPL – Calculation of mean minus lower specification limit, divided by 3 times the standard deviation.

PPU – Calculation of upper specification limit minus the mean, divided by 3 times the standard deviation.

Process Capability – A comparison of actual variability of a process to the process specification.

Quartile – Any of three points that divide an ordered distribution into four parts, each containing one-quarter of the scores.

Range – The difference or interval between the smallest and largest values in a frequency distribution.

Skewness – The degree of asymmetry of a distribution around its mean.

Appendix B. Statistical Definitions (cont'd)

Standard Deviation (StDev) – The square root of the variance, which indicates how closely individual measurements cluster around the mean.

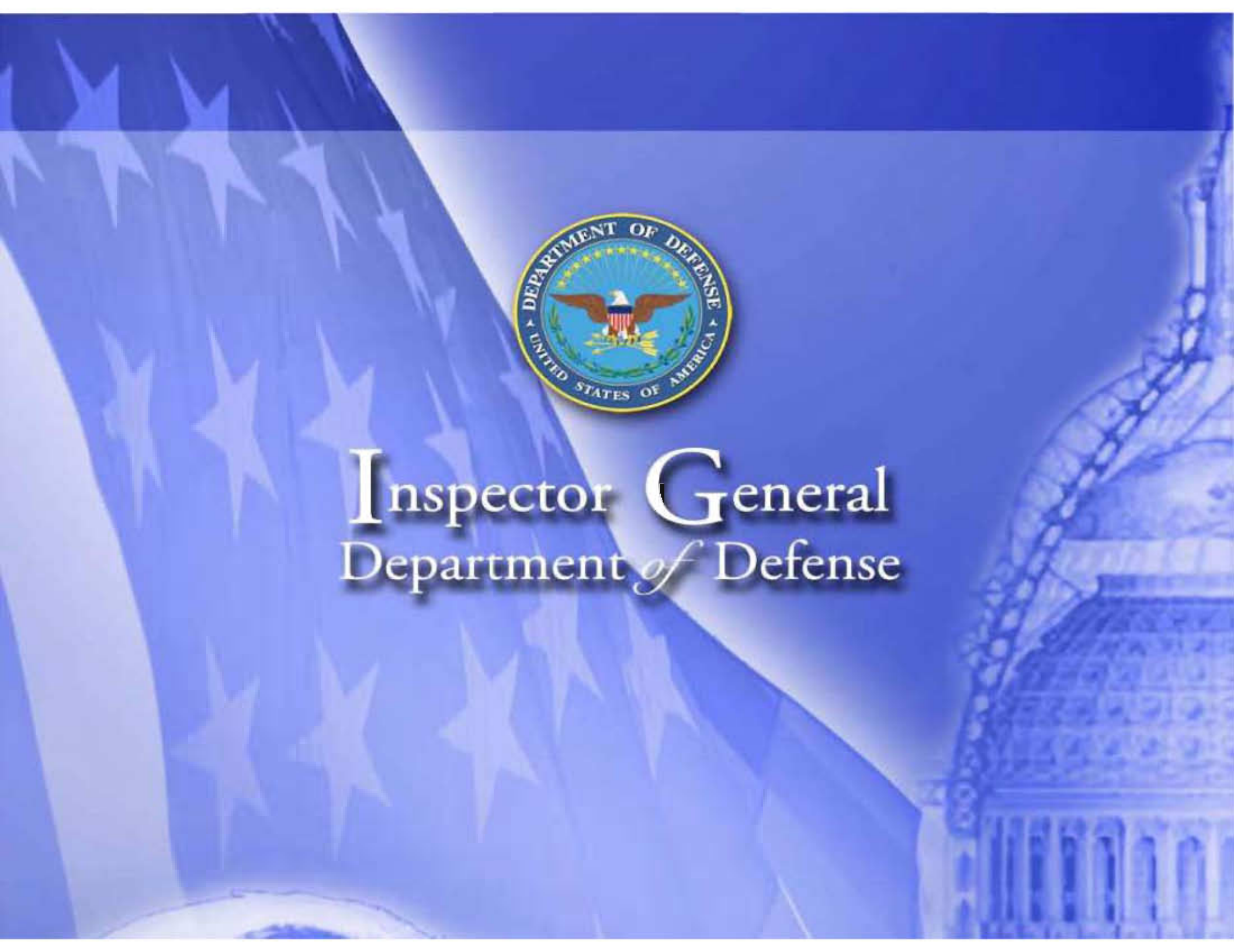
SU – A hyperbolic sine transformation (unbounded).

Target – A desired goal.

Upper Specification Limit (USL) – Deviation above the target permitted to operate within normal process parameters.

Variance – Difference between what is expected and what happens. The expected value of the square of the deviations of a random variable from its mean.

Yield – Percentage of a process that is free of defects.


DEPARTMENT OF DEFENSE
UNITED STATES OF AMERICA
Inspector General
Department of Defense