		Project Name				Northrop Grumman Handling Arm				
		Team				Team 18F10: Keven Benavente, Rayne Dobson, Savannah Hillebrand, David McNealy, Sami Scarcello, Tyler Schafer				
	Vendor	**Part #**	**Part Name**	**Vendor Part #**	**Qty**	**Description**	**Material**	**Dimensions**	**Cost per unit ($)**	**Total Cost ($)**
Parts	Metals Depot	17, 18, 22	Joints	SQ 42	1	Joints to link arms	304 Stainless Steel	2" x 2" x 12"	$197.00	$197.00
		5,7	Sleeve, Ring	SQ 44	1	Sleeve and rings for vertical tube	304 Stainless Steel	4" x 4" x 12"	$788.68	$788.68
		16, 21	Links	SQ 43	2	2 vertical links	304 Stainless Steel	3" x 3" x 24"	$479.45	$958.90
		23	Bolt Pattern Plate	P514	1	Bolt pattern head attachment	304 Stainless Steel	13.75" x 7" x .25"	$40.38	$40.38
		4	Vertical Tube	T411410	1	Tube to attach to links	304 Stainless Steel	1.25" x .109" x 24"	$25.20	$50.40
		2	Clamp Disk	P514	2	Disks that clamp onto table	304 Stainless Steel	0.25" x 1.5" x 3"	$9.96	$19.92
		9, 11, 12	Worm Gear, Sleeve Clamp Screw, Sleeve Clamp Crank	SQ 412	1	Worm Gear for Rack and Pinon	304 Stainless Steel	2" x 2" x 5"	$11.28	$6.45
		10	Sleeve Crank	F5344	1	Crank to move rack and pinion	304 Stainless Steel	.625" x 4" x 6"	$96.50	$58.25
									Total ($)	**$2,119.98**
	Morton Machine Works	7	Rack and Pinion Screw	MH-307	1	Screw to clamp R&P closes	Zinc Die Cast/Steel	3/8" x 2"	$8.90	$8.90
									Total ($)	**$8.90**
	Granger	13,14,15,19,20	Compression Damper	6GTU7	2	Shocks for arm assistance	Steel	8.27" x 0.87"	$160.00	$320.00
									Total ($)	**$320.00**
	TW Metals	1	Clamp	44453 CHIC	1	Material to make clamp	304 Stainless Steel	6" x 4" x "3/8 x 1'	$280.02	$280.02
									Total ($)	**$280.02**
	Zoro	2	Clamp Screw	G1709373	2	Screws to attach to clamp disks	-	-	$33.35	$66.70
									Total ($)	**$66.70**
	eBay	6,8	Rack and Pinion Set	N/A	1	Rack and pinion for vertical adjustment	C45 Steel	-	$80.00	$80.00
									Total ($)	**$80.00**
	Amazon		Titan Arm	B0791JGG5K	1	Arm to model locking joints	Aluminum	-	$267.75	$267.75
									Total ($)	$267.75
Fabrication	**Vendor**	**Part #**	**Part Name**		**Hours**	**Description**			**Cost per unit ($)**	**Total Cost ($)**
	JemeIco		Welding		1	Weld the vertical post to the clamp, and the ball joints			$80.00	$80.00
			Machining		15	Machine the joints, sleeve, links, rings			$80.00	$1,200.00
									Total ($)	**$1,280.00**
Travel	**Vendor**	**Part #**	**Part Name**		**Trips**	**Description**			**Cost per unit ($)**	**Total Cost ($)**
	Chevron		Gas		4	Gas for trips to and from Phoenix			$64.00	$256.00
									Total ($)	**$256.00**
									PROJECT TOTAL (no shipping and tax included)	**$4,679.35**