

NDOGR Request

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Technologies Being Used Today

I thought there were sophisticated monitors on pipelines ... that is not necessarily the case," Dalrymple said. ("Large Pipeline Accident Surprised Governor.")

- PHMSA regulations on pipelines 26 flights per year
- Ineffective, Archaic ways to patrol assets
 - Fixed wing aircraft-Twin Engine Baron
 - Visually monitored and called in from the air
 - Safety in question
- Reporting is problematic
 - Often inaccurate, costly, time prohibitive and prone to errors

TIG Technology: UAS Aircraft

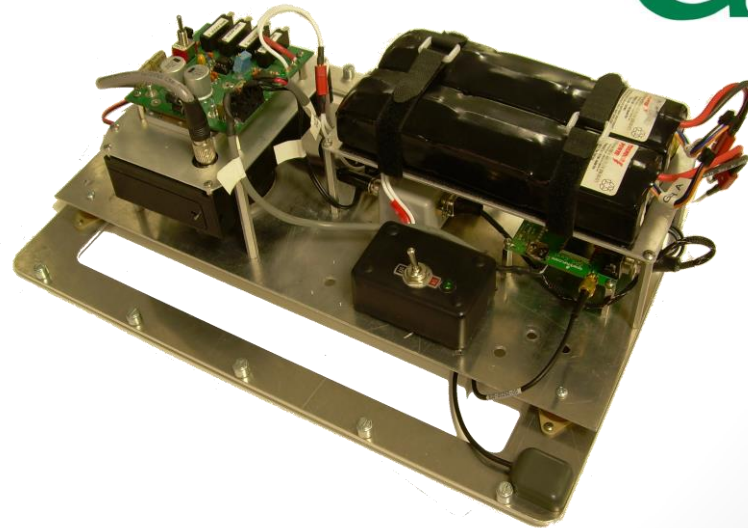
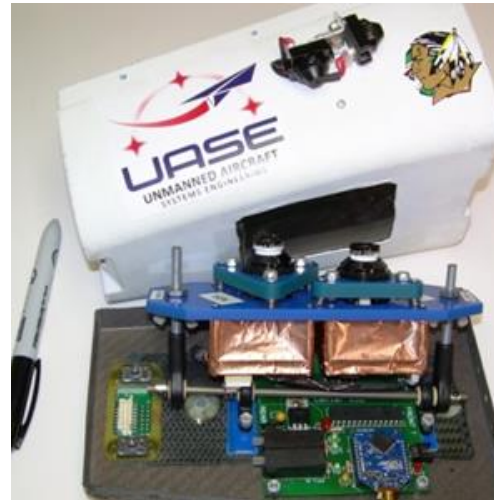
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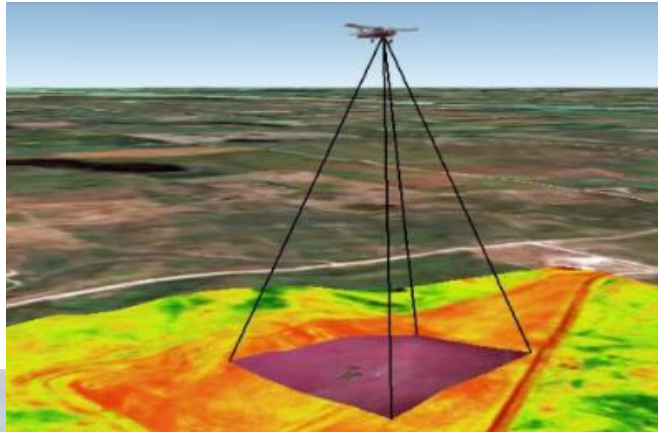
“The Federal Aviation Administration announced North Dakota was among six states selected to research integrating drones into the civilian airspace. The other sites are in Alaska, Nevada, New York, Texas and Virginia.” (“North Dakota Political Leaders Laud Drone Test Site Decision.”)

TIG Technology: Payloads

Customized payloads allow for the collection of custom data. The black box can change based on need.

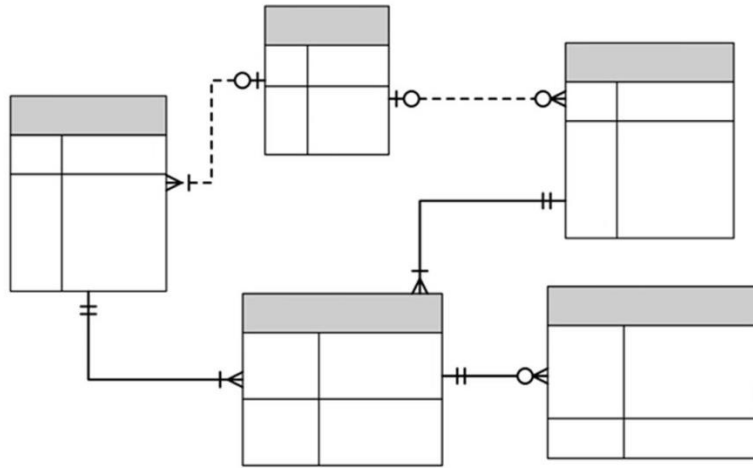


TIG Technology: Data Collection



Each flight accumulates data to be used in comparative analysis. As more data is collected better indicators can be used to set alerts and feed industry new information.

Data Storage



	Date	Indicator 1	Alert	Indicator 2	Alert
Flight 101	Jan-12	100	N	200	N
Flight 202	Feb-12	110	N	500	Y

Key Initiatives/Objectives

- Improve Asset Monitoring
- Increase Pipeline Safety
- Become key partner in identifying risks
- Reduce Costs to Pipeline Repair
- Provide the data to position Pipeline companies to be ahead of issues
- Develop trends used to influence industry best practices

“promote the safe exploration of oil and gas by providing advanced pipeline monitoring and placing new technology in the hands of industry for analysis and action. “

The Industry Interest

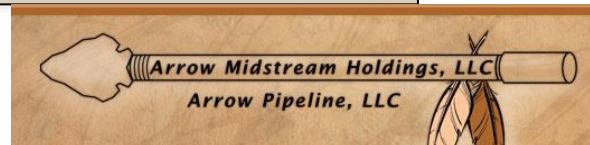
BakkenLink[®]

...The Concept is of interest to the Hess Operations in North Dakota to aid in managing the multiple activities we have underway in the state...

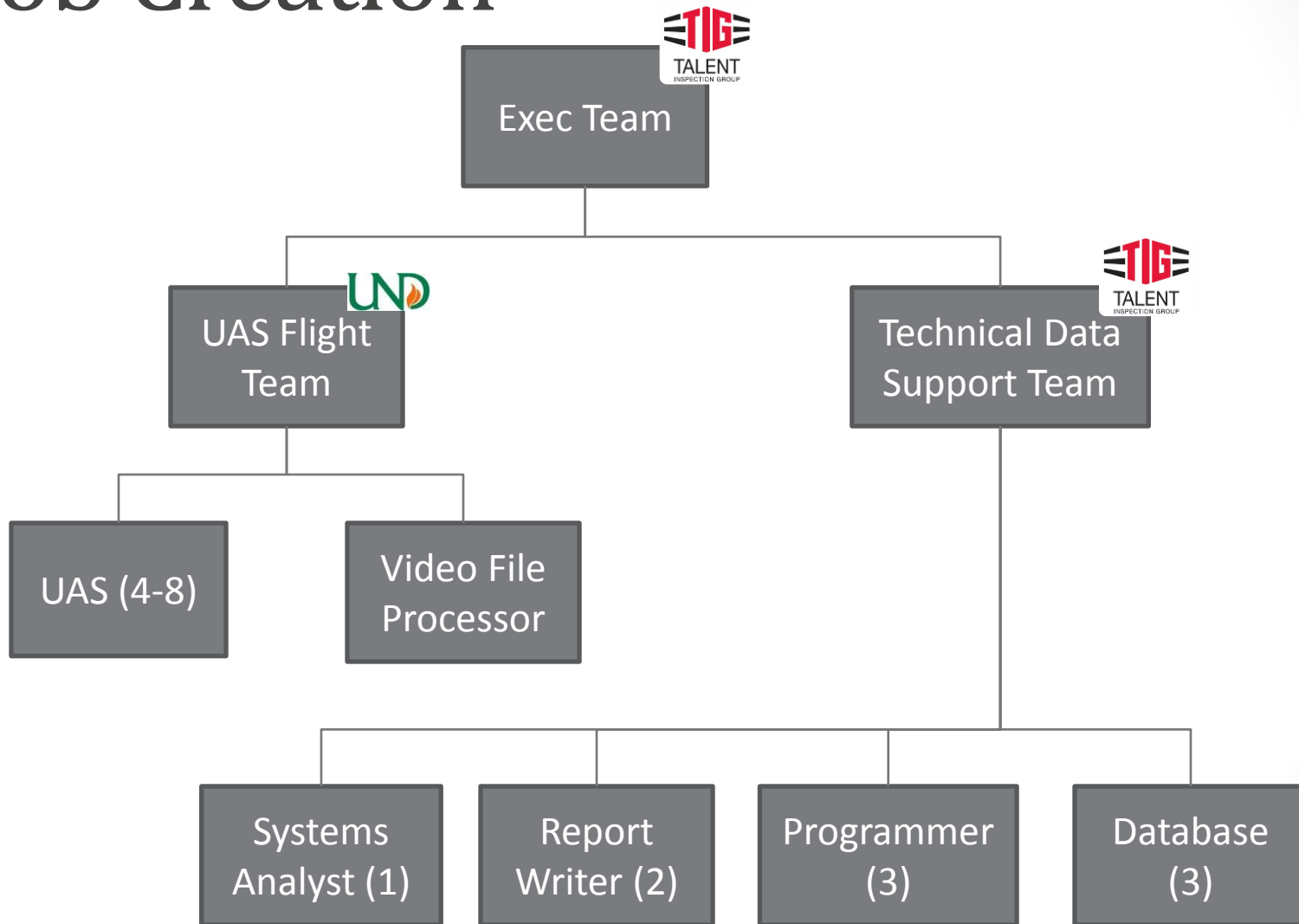


...Anything the pipeline industry can do to more accurately and more frequently monitor pipelines ROWs is of importance...

...The proposed research could result in a means to significantly improve pipeline through aerial patrolling while reducing the cost of biweekly aerial patrols...



Job Creation



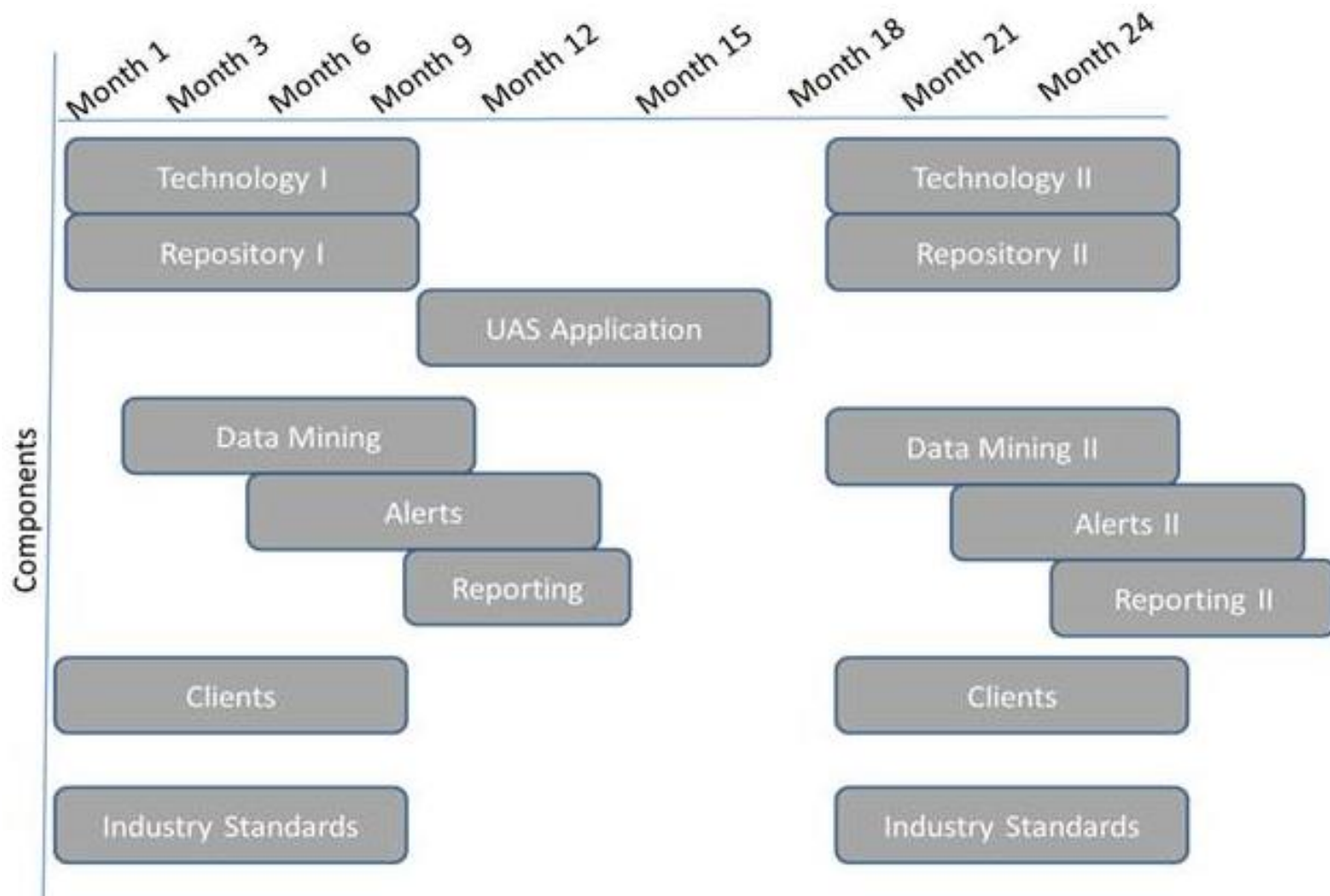
Phase 1 Updated Budget

Phase I: Technology/UAS Implementation	Costs	Original Request (NDIC)	New Request	Additional TIG	Original TIG
Tetracam MCA 6 Channel	15,000.00	7,500.00	2,884.62	4,615.38	7,500.00
HD Block Camera	1,500.00	750.00	288.46	461.54	750.00
Flight Ready PC	2,500.00	1,250.00	480.77	769.23	1,250.00
Fasteners/ Components/Wires	3,000.00	1,500.00	576.92	923.08	1,500.00
Technology/ Research/Innovation	353,000.00	176,500.00	67,884.62	108,615.38	176,500.00
Sensor Testing	125,000.00	62,500.00	24,038.46	38,461.54	62,500.00
Report & Regulatory Analysis	150,000.00	75,000.00	28,846.15	46,153.85	75,000.00
Total Phase I	650,000.00	325,000.00	125,000.00	200,000.00	325,000.00

Phase 1 Timeline

Phase 1: Technology/UAS Implementation	Start Date	Complete Date	Comment
Tetracam MCA 6 Channel	Q2 2014	Q2 2014	Equipment needed
HD Block Camera	Q2 2014	Q2 2014	Equipment needed
Flight Ready PC	Q2 2014	Q2 2014	Equipment needed
Fasteners/Components/ Wires	Q2 2014	Q3 2014	Equipment needed
Technology/Research/ Innovation	Q2 2014	Q4 2014	Innovation to be designed & developed
Sensor Testing	Q3 2014	Q4 2014	Quality Control
Report and Regulatory Analysis	Q4 2014	Q1 2015	Closely monitoring the industry & community needs for the current & future phases

Time Table



Questions?



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Works Cited

- "Fact Sheet – Unmanned Aircraft Systems (UAS)." *Fact Sheet – Unmanned Aircraft Systems (UAS)*. 6 Jan. 2014. Web. 21 Jan. 2014. <http://www.faa.gov/news/fact_sheets/news_story.cfm?newsId=14153>.
- "Large Pipeline Accident Surprised Governor." *Bismarck Tribune*. 09 Jan. 2014. Web. 21 Jan. 2014. <http://bismarcktribune.com/bakken/large-pipeline-accident-surprised-governor/article_9b509b34-7981-11e3-92e2-001a4bcf887a.html>.
- "North Dakota Political Leaders Laud Drone Test Site Decision." *Bismarck Tribune*. 30 Dec. 2013. Web. 21 Jan. 2014. <http://bismarcktribune.com/news/state-and-regional/north-dakota-political-leaders-laud-drone-test-site-decision/article_eef646de-7185-11e3-a943-001a4bcf887a.html>