



Project Management & Procurement



John Baniszewski

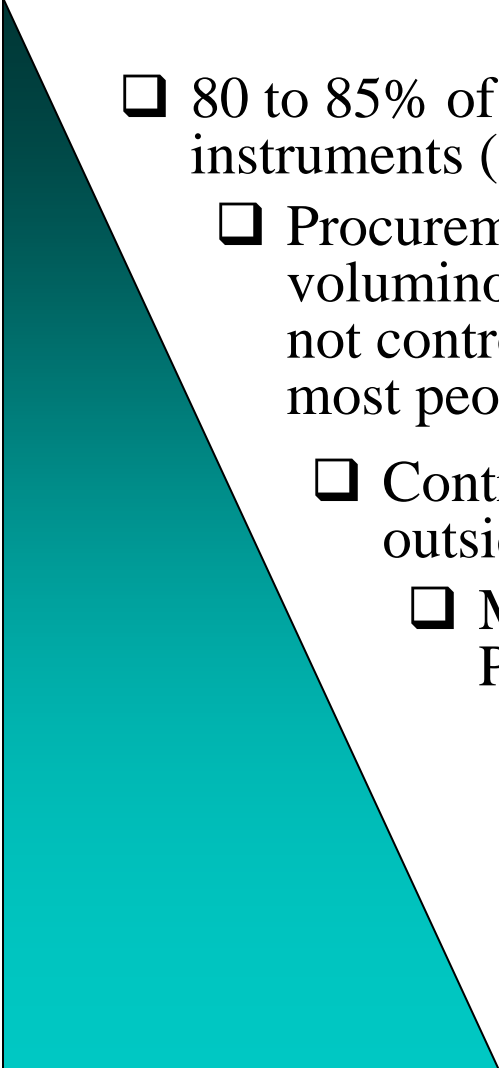
John.D.Baniszewski@nasa.gov

Tel. - 301-286-9208

Project Managers and Procurement

- **“A Guide to the Project Management Body of Knowledge” (PMBOK), developed by the Project Management Institute (PMI), Newtown Square, PA, identifies nine management skills that all Project Managers require:**
 - Project Integration
 - Scope Management
 - Schedule Management
 - Cost Management
 - Quality Management
 - Human Resource Management
 - Communication Management
 - Risk Management
 - **Acquisition Management (Procurement)**

Why Should You Know Something About Procurement?

- 
- ❑ 80 to 85% of NASA's budget is spent on contracts and other acquisition instruments (grants, small purchases, etc.)
 - ❑ Procurement processes are governed by a maze of complex, voluminous, and constantly changing body of laws and regulations not controllable by Project Managers, and not comprehensible to most people.
 - ❑ Contracts are awarded and administered by organizations outside of the line management authority of Project managers
 - ❑ Mistakes in procurement strategy can tie the hands of Project Managers throughout the life of the contract
 - ❑ The Procurement strategy that worked the last time may not work the next time
 - ❑ Procurement policy keeps changing, often making the job of project management more difficult (“one size fits all” approach)

Private versus Government: What's the Difference?

	Private	Government
What you can buy	Whatever is not illegal	Only what is authorized by law
Contract changes	Changes must be bilateral	Changes can be unilateral
Termination for Convenience	Termination must be bilateral	Termination is unilateral
Rights of inspection	Limited – What you negotiate	Virtually unlimited
Selection of sources	Whomever you want	Competition required by law
Contract terms & conditions	Whatever you write	Mandatory, pre-written clauses
Contract law	You are subject to it	The Government writes it (sovereignty)
Authority to enter into contracts	All that is implied by your position	Only what is explicitly stated in writing
Public information	It is generally totally private	It is generally publicly available
Form	Written or verbal	Must be written
Socio-Economic factors	None	Many

Contracting Officers and Project Managers

- Procurement is governed by a huge volume of complex and constantly changing regulations & policies. Projects need people trained and experienced in this specialty
- To prevent conflict of interest situations, contracting officers are not part of the line organization of flight projects
- Project managers must rely on outside organizations to provide contracting officer support
- Project managers have no supervisory control over contracting officers
- Projects do not have direct control of procurement staffing levels or procurement workload prioritization
- Procurement staff is often not co-located with projects
- Bottom Line - Successful project procurement must be achieved through the development of an effective working relationship, rather than by direction. If you have some basic knowledge, you can be more effective in dealing with your CO

Your Goal

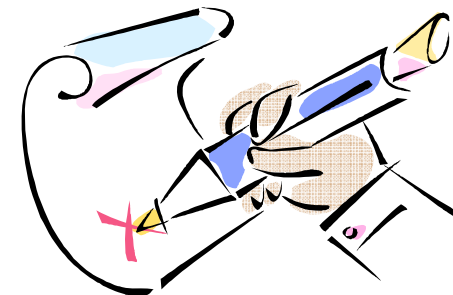


You
Can't

Most Common Types of Contracts

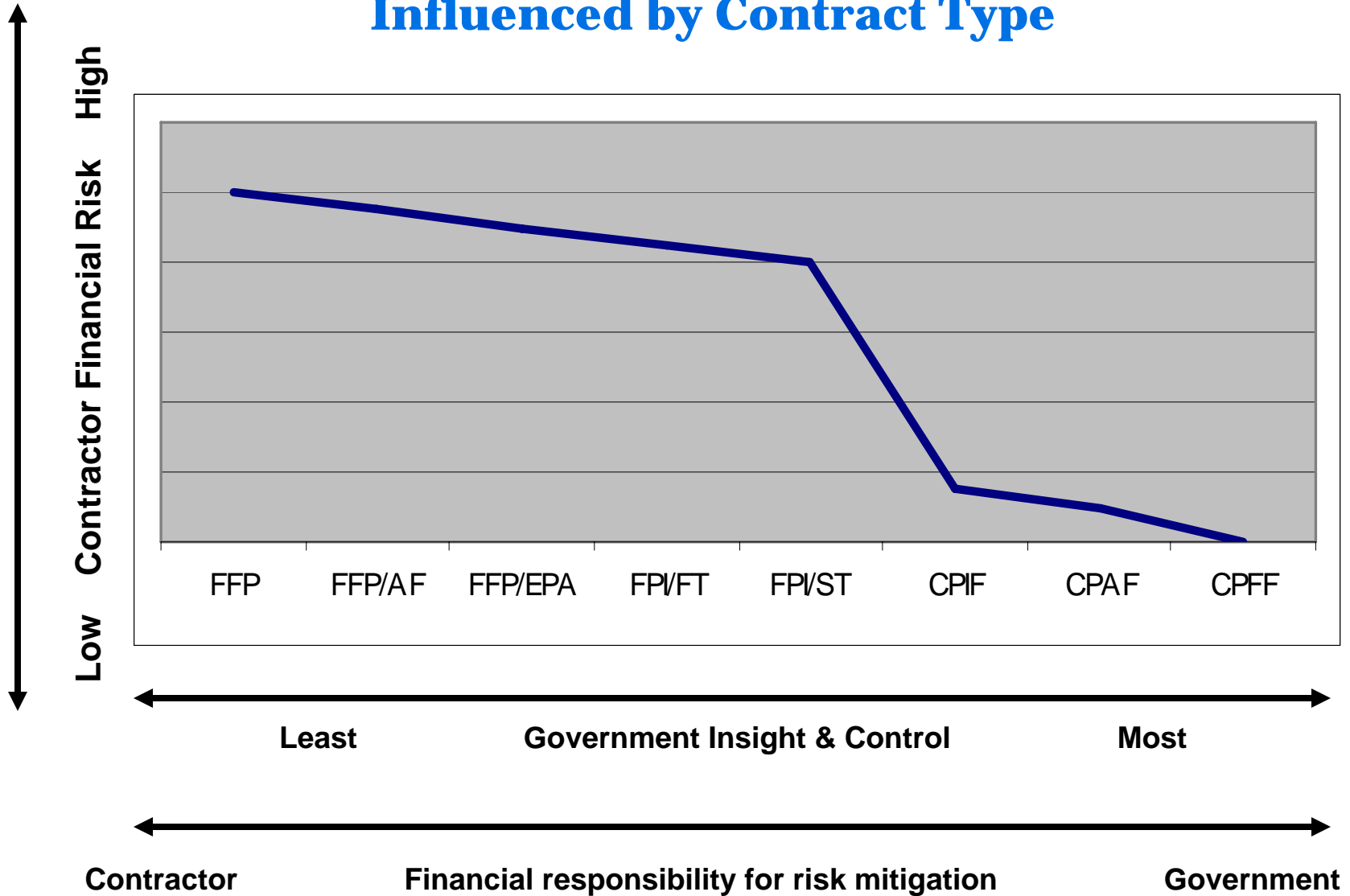
The Federal Acquisition Regulation includes a range of contract types for allocating risk between Government and Contractor

- **Firm Fixed Price (FFP)** – Contractor gets paid the negotiated price, which does not get adjusted for any reason (except changes)
- **Firm Fixed Price/Award Fee (FFP/AF)** – Same as FFP, except there is a separate fee pool in addition to the FFP. The Government makes subjective determinations concerning how much of this pool is earned.
- **Firm Fixed Price With Economic Price Adjustment (FFP/EPA)** – Some clearly defined element of the contract price may get adjusted, due to uncontrollable market forces
- **Fixed Price Incentive (FPI)** – Operates like a CPIF contract until the target profit is gone, then it becomes FFP. Can be Firm Target (FT) or Successive Target (ST)
- **Cost Plus Incentive Fee (CPIF)** – Contractor gets paid actual cost. There is a separate fee pool. This pool is reduced if there is an overrun, using an objective formula.
- **Cost Plus Award Fee (CPAF)** – Contractor gets paid actual cost. There is a separate fee pool. This pool is evaluated on a regular basis, using subjective assessments of contractor performance (technical, schedule, cost)
- **Cost Plus Fixed Fee (CPFF)** – Contractor gets paid actual cost. There is a separate fee pool. The contractor gets paid the entire fee, regardless of the quality of performance.



Available Contract Types

Your Ability to Manage Your Contractor Is Heavily Influenced by Contract Type



Solving Contract Problems

■ 1 ■

Quotes

- “A bad plan is better than no plan” – *Charles de Gaulle*
- “Any contract is better than no contract” – *Baniszewski*
- “No plan survives contact with the enemy” – *Von Moltke*
- “No contract survives the reality of flight projects”
– *Baniszewski*



Solving Contract Problems – “You Know, It Don’t Come Easy”

- **Flight project hardware & services procurements are the most complex type of procurement done in the Government**
 - The very nature of NASA as a Science and R&D agency means that we spent most of our money on highly complex, never-been-built-before purchases
 - The visibility, size, difficulty, and duration of our major system procurements makes them vulnerable to uncontrollable or political forces

Solving Contract Problems



The Bad News

- No matter how well you plan a NASA flight project procurement, the resulting contract will change substantially before it is completed



The Good News

- Government contracts contain some extremely well-conceived “boiler-plate clauses” that can help Project Managers deal with most of the problems they will encounter

Boiler Plate Clauses - FAQ

- **What are they?**
 - “Boiler Plate” consists of contract clauses are contained in the procurement regulations. The text is standardized and cannot be changed
- **How many are there?**
 - Hundreds
- **Are they in my contract?**
 - A lot of them are.
- **How did they get there?**
 - Some are required by regulation, others were selected by your CO based on what you are buying and how you are buying it
- **I read the contract. How come I can't find them?**
 - They are included in the contract “by reference”. You have to look up the text in the procurement regulations, but they are full-fledged clauses as far as your contract is concerned.
- **Are they important?**
 - Most have no real significance to you as a Project manager. Some, however, are very important.
- **Why are these important?**
 - They can help you solve the unpredictable but inevitable problems you encounter as a Project manager.

Contract Problem – Getting the Information You Need

- **During integration and test of the payload with the spacecraft, unusually high temperature readings are found in a certain subsystem, and the source of the heating cannot be determined. Analysis indicates that the source may be an electronic subassembly that was purchased from a subcontractor under a FP contract. The NASA Project requests to look at the fabrication drawings for the subassembly, and is told by the prime contractor that they are not available, as they were not a deliverable under the subcontract. What can the Government do?**

Inspection (FAR 52.246-8)

- **The Gist of It:** The Contractor has to have an inspection system acceptable to the Government. The Contractor has to keep records and let the Government look at them. The Government can require any reasonable test or inspection it needs, even at subcontractors' plants, but should not disrupt work. If we find a defect within six months of accepting something, the Contractor has to fix it for no additional fee. If the Contractor won't fix it, and it's a fixed price contract, we can get somebody else to do the work and charge the Contractor what it costs to fix it.

Contract Problem – Calling Time Out

- **Contractor X is building five radiometers. They are being built in sequence, with deliveries six months apart. Pre-shipment testing of each unit requires two weeks. During testing of unit two, seven defects are found, traceable to workmanship errors. During the test program, the Contractor is having problems with employees failing to follow testing procedures. The Contractor is averaging four incidents of non-compliance per day. What can the Government do?**

52.242-15 Stop-Work Order

- **The Gist of It:** Any time we want to, for whatever reason, we can order the Contractor to stop some or all work for 90 days. If there are unavoidable expenditures, they must be kept to the bare minimum. After 90 days, we have to let them go back to work or terminate the contract. If we don't terminate for default, we have to pay whatever additional costs they incur, plus fee.

Contract Problem – Waste, Fraud, & Abuse

- You are the COTR for a large instrument contract. You visit the Contractor's plant frequently and get to know the Contractor's people. One engineer named Fred has been battling cancer. The last time you visited, three months ago, you heard he was in the hospital. You are looking at who has charged your contract. You see Fred charged 40 hours for the past week, plus 16 hours overtime. You remark to one of the Contractor's people, "It looks like Fred must be feeling better". That person replies to you, "Oh, didn't you know? Fred died last month". What can you do?
- You are the COTR for a contract that provides operation & maintenance of a remote tracking facility. You receive an anonymous note from someone who works at the facility. The note says that the civil servant who oversees the facility has been having a support contractor doing home improvements on his house, including building a deck, and charging the costs to the contract. The person who sent the note says that if someone does not take action, he will call the OIG. What can you do?

52.215-2 Audit and Records—Negotiation

- **The Gist of It:** If this is a cost plus contract, or a sole-source fixed price contract, the Contractor has to let us look at any of his books or financial records, even if we made final payment three years ago. He has to flow this requirement down to subcontracts that are cost plus or sole source. If this was a competitive fixed price contract, we have no such rights for the initial contract, but we do for contract changes.

Contract Problem – Do I Have to Pay For That?

- You are the Finance Manager for a flight project. You are worried about your budget – you have not completed PDR, and your financial reserves are down to 18%. One of your Resource Analysts has been doing cost variance analysis on one of your major contracts. Because of a significant variance last month, she has obtained and examined detailed cost vouchers. There are a number of specific items she questioned. The first one is a direct charge by the owner of the company for three hours of technical labor, billed at a direct labor rate of \$198/hour. Another charge is \$12,000 for an ocean-front luxury hotel used by the Contractor to conduct an off-site retreat. There is a charge for a \$12,000 leather sofa for the Contractor's Project Manager's office. There is a charge of \$10,000 to buy insurance for the shipment of any extremely fragile optical assembly (which is part of the spacecraft) that took two years to fabricate (at a cost of \$600,000). Lastly, there is \$4,000 for a trip to Boston, in connection with recruiting fresh-out mechanical engineers from MIT. Should you pay for all this?**

52.266-7 - Allowable Cost and Payment

- **The Gist of It:** We have to pay the Contractor's actual costs every month. But the costs have to be allowable under the procurement regulations, they have to be associated with our contract, and they have to be reasonable. There is a big section in the procurement regulation that covers what we will or will not pay for. We pay their overhead and G&A based on an estimated rate, but eventually we have to pay at whatever actual rate DCAA approves.

Contract Problem – A Team of Rivals

- **Your contractor is building three spacecraft, delivered one year apart. Two days after the first one is launched, it suffers a sudden and catastrophic on-orbit failure. A team is assembled to identify the cause of the failure. The team includes three engineers who are world-class experts in their specialty. They are employed by a company that is a chief competitor of the spacecraft contractor. The failure review team has asked for many design drawings, parts lists, test procedures, test results, and process instructions. Your contractor balks at this request, because the majority of his spacecraft business is commercial, and if this information fell into the hands of a competitor, it could give that competitor an edge in an upcoming DoD procurement. What can you do?**

52.227-14 Rights in Data

- **The Gist of It:** If we paid for the data, we own it, and we can do whatever we want with it. If we didn't pay for it, the Contractor owns it, and we normally don't even want to see it. Sometimes, however, we need it. In that case, we can require the Contractor to provide it but we have to protect it and we can only use it for specific purposes. An alternative is to ask for a sanitized version of the data that answers our most compelling questions without giving away the Contractor's sensitive stuff.

Contract Problem – There's No Money

- **With three months to go in the FY, HQ suddenly and unexpectedly takes away the rest of your FY funding. They reassure you that you will get the funding promised next year, but the rumor mill says otherwise. Your Contractor runs out of money next week. He knows that if he stops work, he will lose the team of experts that enabled him to win the contract, and who are essential to complete it. On his own, he chooses to keep those people on the job after the money runs out. He asks if you have a problem with this, but you say nothing. Two months later, your CFO receives a report telling her that your Contractor is showing costs in excess of obligation, and wants to know why. What do you do?**

52.232-22 - Limitation of Funds

- **The Gist of It:** The Contractor will try to do the contract for the negotiated value (give BEST EFFORTS). The Government will specify how much money is available to pay for performing the contract, and the Contractor will tell us when that money will run out. From time to time, the government anticipates adding more money. When the Contractor is almost out of money, he has to warn us. When the money is all spent, he can stop work. If he continues working, we aren't required to pay him. If he does keep working after the money runs out, and we do get more money, we can pay him for the work he did. The Contractor, however, can't spend more money than the negotiated contract value. If it wants to, the Government can raise the negotiated contract value. If we issue a change order, we have to add money to pay for it, and increase the contract value, or the Contractor doesn't have to do it.

Contract Problem – Disaster Happens

- **A Contractor is building four spacecraft under a FP contract. They are delivered at one year intervals. Spacecraft one suffers a catastrophic on-orbit failure two weeks after launch. Data indicates that the cause may have been due to problems with certain components of the electrical system, but this cannot be conclusively proven. Investigation of components for the second spacecraft identifies significant workmanship defects which could definitely cause failures. According to the contract, the Contractor must provide a replacement spacecraft in the event of a Contractor-caused failure. The Government demands that the Contractor initiate work on a replacement spacecraft. It also demands that the suspect components not be used in the next three spacecraft. The Contractor's response is that the investigation is inconclusive, and that there are several other potential causes of the on-orbit failure. He refuses to start work on a replacement spacecraft, and refuses to switch out the suspect components. What happens?**

52.233-1 Disputes

- **The Gist of It:** If the Contractor and Government reach an impasse over some contract issue, there is a long, formal, agonizing, time-consuming, labor-intensive procedure that both parties must follow, which may end up in court. The Contractor has to keep working while this is going on.

Contract Problem – Lemons and Lemonade

- Your project was a partnership with DoD, in which NASA would fund the payload, and DoD furnish the spacecraft bus and launch service. The week after CDR, DoD withdrew from the partnership. There is a new project that is funded from a different UPN, but which does similar science. You would like to fly your payload on that spacecraft. The new project just awarded its spacecraft contract a week ago. It was a very close competition, with four bidders. The winning Contractor was selected based primarily on lowest probable cost and greatest likelihood to deliver on schedule. To fly your payload, there would be huge changes to the spacecraft design. You estimate that the cost of the new spacecraft contract would double, and delivery would slip more than a year. Can you fly your payload on that spacecraft?**

52.243-1 & 2 - Changes

- **The Gist of It:** If the Government wrote the specifications or the SOW, it can unilaterally change them any time and without warning. We can even do this after delivery, as long as we haven't made final payment. The Contractor has to accept the change. The Government has to pay for everything impacted by the change, or extend the delivery schedule, if the Contractor requests it. If the Contractor runs out of money, he does not have to do the changed work. We can't buy more stuff. But we can enhance the capability of the stuff we already have under contract.

Contract Problem – Those Dang Subcontractors

- **Company X built four instruments under a CPAF contract. The contract had 300% cost growth. The vast majority of the growth was due to a dozen different subcontracts for various subsystems. You have been directed to award a sole-source follow-on to Company X to build four more instruments, using the same design. What action can or should you take, if any?**

52.244-2 Subcontracts

- **The Gist of It:** The Contractor should have a good purchasing system in place, with documented processes that can withstand an audit by a DoD auditor. If he passes the audit, we don't need to get involved in subcontracting decisions unless we specifically want to (perhaps for a really critical, large subcontract). If the contractor fails the audit, the project will have to spend huge amounts of labor examining and approving every large fixed price contract, and all "cost plus" ones.

Contract Problem – They Have It, We Own It



52.245-5 Government Property

- **The Gist of It:** There are two types of Government Property (GP). There is Government-Furnished Property (GFP), which is property that the government obtained somehow, and then delivers to a Contractor. Then there is Contractor-Acquired Property (CAP) – this is property that the Contractor bought for use on our contract, with our money. The Government owns all GFP and CAP.
- When we furnish GFP, we have to deliver it on schedule, and it has to work. If we deliver GFP late, we have to pay the Contractor any costs associated with the delay, plus a fee, and may have to give him delivery schedule relief. If the GFP doesn't work right, we can have the Contractor fix it, but we have to pay the Contractor any costs associated with the fix, plus a fee, and may have to give him delivery schedule relief. We can unilaterally change the type and/or quantity whenever we like, but once again, we have to pay. The Contractor can't use GP for anything other than our contract.

52.245-5 Government Property cont.

- If we paid for it, it is GP, and we own it.
- If it is some kind of commercial equipment, we may or may not pay for it directly under the contract. It depends on what it is used for.
- The Contractor has to take care of our property. However, if he damages it, we still pay the cost to fix it. The contractor shouldn't buy insurance for the property.
- If he no longer needs the property, the contractor still has to take care of it. He can't get rid of it without our permission, and he can only get rid of it the way we allow him to.

Contract Problem – You Need a Stick!

- **You are training for the world championship in two-man canoe racing. Your regular partner became ill two days before the qualifying race. There are five canoes in the race. Only the winner will advance. You find a new partner who is a stranger to you, but who has good references. You sign a contract with him, agreeing to pay him \$5,000 to be your partner. Half way through the race, he stops rowing and starts drinking a beer. You yell at him to resume rowing. He gives you a one-fingered salute. You pull a hand grenade from your pocket and yell “start rowing, or I’m pulling the pin!”. Should he be scared?**
- **Same as above, but you partner looks down into the bottom of the boat. He sees an empty plastic shopping bag that says “Toys-R-Us”, and a cardboard box that says “GI Joe Plastic WW II Hand Grenade”. Should he be scared?**

52.249 Termination

- **The Gist of It:** If this is a “Fixed Price” contract and the Contractor fails to deliver on time or fails to make progress to such an extent that contract performance is endangered, we can terminate for default. We don't owe the Contractor any money. He has to pay back whatever we paid him to date. We can get another contractor to do the work, and any increase in the price of what we buy has to be paid by the terminated Contractor. If this is a “Cost Plus” contract and the Contractor fails to make progress to such an extent that contract performance is endangered, we can terminate for default. The Contractor must stop work immediately, and only spend money that is essential to efficiently closing out the contract. We own everything purchased with our money. We pay his actual costs, plus some fair portion of his fee.

Contract Problem – Fixing the Small Stuff

- **The Contractor is building a ground system which will be used by a large number of scientists for analysis of data received from The Great Observatory Spacecraft, which will be launched in five years. The COTR is reviewing the design and parts list for the science consoles to be built by the Contractor. The COTR notices that the Contractor intends to use displays capable of generating 64 different colors, with pixel resolution of 0.07. The COTR used to be an astronomer, and knows that for astronomical observation, the more colors and better pixel resolution the better. The contract specification does not go to this level of detail. What can the COTR do?**

1852.242-70 Technical Direction

- **The Gist of It:** The COTR can steer the Contractor in a particular direction, but not if it changes any requirements of the contract or causes the contract value to change. If the Contractor thinks it is a change, he should notify the CO, who has to give official direction.

Contract Problem – Keeping Things Under Control

- You are a Contractor. You are building a ground system which will be used by a large number of scientists for analysis of data received from The Great Observatory Spacecraft, which will be launched in five years. There is a big review in which the scientists who will use the system are briefed on your design. Many of them are highly displeased with your implementation approach, because it lacks many of the features and capabilities they would like to have. Your COTR has collected their input, and directs you to make three dozen changes to your technical approach. A few will actually reduce the cost. A third are cost-neutral. The rest would drive up the price. What do you do?**

52.243-7 Notification of Changes

- **The Gist of It:** If someone other than the Contracting Officer tells the Contractor to do something that the Contractor considers a change, the Contractor should not do it. The Contractor should notify the Contracting Officer immediately and ask for direction.