Federal Procurement: A Study of Some Pertinent Properties, Policies and Practices of a Group of Business Organizations

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Abstract

This paper is a final report of a questionnaire survey of 27 industrial organizations designed to, a. illuminate selected perceptions, policies and procedures regarding government contracting; b. describe general business objectives and managerial methods; and c. yield assessments of how the surveyed firms perceived their present and future business prospects. A measure of special attention was accorded to exploring policies and procedures relating to contractual incentives and their role in program planning and performance

In proportion as Federal government procurement functions have become larger and more complex, so have concerns with devising effective means of implementing them increased. Shared by the agencies responsible for Federal programs, by the Congress, by the industries and other organizations more and more enmeshed in governmental undertakings, and, not least, by an interested citizenry, concern with Federal procurement policies and practices has grown into a matter of the highest, most encompassing national interest. Giving expression to the depth of this concern in recent years have been public displays in the press, on the campuses, and in the nation's legislatures, together with less dramatic if not less numerous studies and experiments in the fields of procurement and contracting.[1] Our own research adds a further increment to the sum of these latter.

Undertaken as a broad-gauge study of contracting, motivational, organizational and managerial processes relevant to Federal R&D efforts, we based our activities on the belief that, regardless of its context or object of the moment, effective performance of the government's procurement role depended on forging policies and methods adapted to an understanding of the societal, institutional and human nexus of their application. Oriented around that premise, detailed questionnaires and searching interviews enabled us to pursue a great range of vital and fascinating topics with many people representing a variety of functions in government and industry.[2] Most of the data produced by these investigations

currently are undergoing analysis and await later report. The present paper discusses one portion of those data derived from a questionnaire survey of a diverse group of business organizations.

In addition to providing descriptive information useful in the interpretation of intensive interviews conducted with persons in many of the same firms, this survey was designed to, a. illuminate selected perceptions, policies and procedures regarding government contracting; b. describe general business objectives and managerial methods; and c. yield assessments of how the surveyed firms perceived their present and future business prospects. A measure of special attention was accorded to exploring policies and procedures relating to contractual incentives and their role in program planning and performance.

The Questionnaire

In our research we relied for data primarily on depth interviews and two questionnaires. One of the latter was completed by individuals and represented their own points of view. The second questionnaire, the basis of this report, we called a "Policy Questionnaire."* Unlike the first instrument, this one was responded to on behalf of the organization, it having been made plain that its content would be treated as a statement of official policy (hence its title). How and by whom the Policy Questionnaire was to be completed we left to the discretion of the subject organization with the stipulation, however, that it be reviewed and certified by

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* A copy of this questionnaire is appended to this report.

a responsible company official (usually someone at a vice presidential or comparable level). For our part, we agreed to hold replies in strict confidence.

In common with all of our methods, the Policy Questionnaire underwent an extended period of trial and development. We have described this process elsewhere in detail,[2] but, briefly, the instrument used consisted of four major sections covering: A. descriptive characteristics of the responding firms (e.g., sales, employees, product lines, etc.); B. detailed features of certain internal organizational structures, government contracting experience, R&D involvement, policies regarding contracting goals and methods, and views about incentives; C. a review of various financial policies and practices, including profit goals and uses; and D. multidimensional ratings of present and expected future organizational status (e.g., profitability, market opportunities, prognostications of spin-off from R&D, etc.)

Obviously the Policy Questionnaire was lengthy and sometimes difficult. Extended discussions between the researchers and the subject firms were common both before and after filling it out. These conversations helped both parties clarify purposes and points of interpretation.

Coding Responses to the Questionnaire. Structured as an admixture of pre-coded (i.e., fixed alternative or check-list-type) items and open-ended questions calling for narrative responses, the Policy

Questionnaire required coding of the latter into quantifiable categories, i.e., categories the frequency of use of which could at least be counted. Accordingly, after a reconnaisance of the completed questionnaires, a detailed coding system was devised that included both categories and instructions for their use. A coder was trained to use the code and then proceeded to reduce each questionnaire to a set of coded response categories. As a check on the reliability of this process, a second coder independently classified a randomly selected 20% sample of questionnaires. Excluding pre-coded items, the two coders agreed 94% of the time.

Coded data were transferred to punch cards and their contents summarized. Infrequently used code categories were identified, eliminated or redefined, and the data re-coded (and re-punched) using a standardized computer routine.[4] In all but a few instances code categories were converted to simple dichotomies for final analysis. No re-evaluation of coder reliability was undertaken after re-coding because the greater simplicity of the final codes could only increase reliability and it already was more than adequate.

Most of the data generated by the Policy Questionnaire were categorical or nominal (i.e., they constituted choices from among two or more unordered alternatives). In several cases, however, they were at least ordinal, resulting from rankings or ratings. Also the form of the questionnaire provided for the derivation of several special purpose "indexes" based on a priori (rational,

common sense) combinations of certain of its items.

The Responding Organizations

A total of 27 firms completed some or all of the Policy Questionnaire. The number responding to any given item varied, but the modal N was equal to 25. All respondents, of course, were volunteers, but a concerted effort was made to include in the sample organizations of differing product lines, sizes, degrees of involvement in R&D, ratios of government-to-commercial business, geographic location, etc. Speaking generally, our resulting sample of contractor organizations was as follows:

A. Product Lines. Twenty-two of the organizations studied were engaged in a major way in aerospace or electronics work; five were also involved in other manufacturing and six were engineering or support service contractors.

B. Size. Eight of the sampled corporations employed more than 12,000 people; seven employed between 2,000 and 12,000 and the remaining ten for which the information was available had fewer than 2,000 employees. As regards sales: eight companies were over $325 million annually; six had sales between $75 and $325 million and another 12 were under $75 million in annual sales.

C. R&D Spending. A majority of the firms in the sample were engaged in R&D work to a significant degree. Nine annually spent $75 million or more (from all sources) on R&D; two spent between $15 and $75 million, five between $1 and $15 million and the other 11 spent less than $1 million a year on R&D.

D. Involvement in Government Contracting. Of the 27 firms responding, 19 were prime system contractors and the rest worked chiefly as subcontractors (although some of them served occasionally as primes). Twenty companies did over 80% of their business with the government (mostly with DoD, but with strong NASA representation).

E. Dollar-Values of Contracts Held. More than half the sampled organizations held or had held individual contracts worth over $10 million; just under one-third had had contracts valued in excess of $100 million.

F. Familiarity with Government Business. Most of the firms studied had been doing business with the government for some time. Only four had entered the government market more recently than 1957 and fully half had contracting histories dating from before 1950.

The preceding descriptions all refer to that unit of the company with which we dealt directly. Sometimes this was a division or subsidiary of a larger corporation. Therefore, perspective on our sample is gained by knowing that among the parent organizations of the units with which we interfaced, nine were doing over 80% of their total business with the government; six fell between 51% and 80%; five were between 26% and 50% and six others were doing less than 25% of their total business with the government (one was unaccounted for).

In summary, then, nearly all of the firms in our sample (which, incidentally, included four of the top five DoD contractors and

three of the top five NASA contractors) were at least moderately involved in R&D contracting; many were engaged in volume production as well. Some respondents were little involved in government work, but, on the whole, the sample represented chiefly government contracting divisions of large corporations or government-oriented smaller companies engaged in aerospace/electronics work, or else similarly oriented firms providing service and technical support to government agencies.

That such a sample may be somewhat special in comparison with industry in general is indicated by one firm's feeling obliged to warn us that, "Our company is dedicated first (their emphasis) to the Government market -- therefore, our outlook reflects this attitude." Prudence in generalizing may be advisable, but it is true nonetheless that a sizable and useful, if technically "accidental," group of organizations was assembled for this study. It was a group that included numbers of large experienced government contractors, but which also offered opportunities for comparative analysis and, in any event, was one quite suitable to our purposes.

General Results and Discussion

After recoding, all data cogent to the substantive and procedural issues outlined in our introductory remarks (a total of 41 "criterion" or dependent variables, each of which will be cited in the following pages) were systematically cross-tabulated (and otherwise analyzed) against eight independent or "predictor" variables, viz.:

1) The status of a firm as mainly a Prime or Subcontractor.

2) The Sales volume of the Parent company.

3) The Sales volume of the responding organization (here called, Self).

4) The percentage Mix of government and commercial business in the Parent firm (called G/C mix, Parent).

5) The Mix of business in the responding organizations (i.e., G/C mix, Self).

6) The volume of R&D investment (from whatever sources).

7) The Number of Prime contracts held.

8) The Dollar-Value of the Prime contracts held.

For supplementary comparative analyses, a sub-sample of five large and five small firms was selected from the larger group of respondents so as to enhance contrasts among them.[5] For this purpose a firm was classed as "large" if it met all of these three criteria: 1) Parent sales of $700 million or more; 2) Division sales of $325 million or more; 3) Organizational R&D expenditures over $75 million annually. Conversely, a firm was called "small" when: 1) Parent sales equalled less than $75 million; 2) Division sales were under $35 million; and 3) Annual R&D spending totaled less than $1 million.

As with other findings reported here, results from this sub-sample must be interpreted with some care both because of the limited sample sizes and the somewhat special characteristics of

the firms involved. These same considerations also caused us to confine our statistical analysis to relatively simple techniques. At the same time, however, because we were here more concerned with generating ideas than with their formal test, we adopted somewhat liberal standards of statistical significance.[6] Consequently our findings should be viewed as indicative rather than as decisive, but since, apart from its descriptive functions, we thought of the Policy Questionnaire chiefly as a means of developing hypotheses rather than as a way of verifying them, we do not consider this a very serious caveat.

Relations Among Predictor Variables. We mentioned above that eight independent or predictor variables were defined so that we might test against them fluctuations in other measures. Before turning to those substantive analyses it will be useful to review the interrelations observable among the predictor variables themselves, commenting only on those among them that were statistically significant.

The most striking thing about those relations was that, based on the regularity with which it correlated with other of the independent variables, sales stood out as a dominant element, especially sales of the parent firm. (This, of course, was a major reason motivating selection of the large/small sub-sample.) If sales may be taken as a direct index of organizational size, it may then be said that company size cross-cuts most other predictor variables and may generally be expected to condition their specific effects.

While this generalization will be seen typically to hold, other measures often have independent effects and so cannot be regarded as merely redundant with size. Moreover, in substantive analyses, we shall see that size is by no means always the most sensitive pointer.

At any rate, when we separately tabulated the sales of the responding organization (i.e., Self) and those of its parents and compared them, we found the two to be directly associated (Tau-B=.48, X^2=6.03).[7] Given that in some cases the responding organization was the Parent, so that any comparison of Parent and Self sales would tend thereby to be artificially inflated, the moderate magnitude of this correlation can largely be accounted for by the fact that our sample included some small units of large firms. Otherwise though the positive association between Parent and Self sales bespeaks the general principle that organizational unit size tends to vary with overall organization size.[8] But, this association being less than unity among the companies we studied, it seemed advisable to analyze the data separately for Parent and Self sales.

Looking to other variables: Parent sales we found to be quite clearly related with the magnitude of a firm's R&D investment (Tau=.54, X^2=7.82). R&D spending was also associated directly with Self sales, but the relation was not quite so strong (Tau=.48, X^2=6.01). Thus, it was larger firms that spent the R&D money,

although, in our sample anyway, not all big companies spent on R&D, nor were all the units of large firms that spent on R&D themselves necessarily large in terms of sales.

The government/commercial business mix of the parent was only weakly related to the status of the respondent organization as a prime or subcontractor (Tau=.35, X^2=2.90). This variable was much more clearly related with the respondent firm's <u>own</u> (Self) G/C mix (Tau=.56, X^2=7.88). Those companies (parent) with a larger percentage of government business (relative to commercial sales) tended to be organizations that handled larger contracts (Tau=.48, X^2=4.22). Prime contractors thus tended to have a lower ratio of commercial to government business, and the larger contract dollars were spent with firms having a high G/C mix. Such findings, we might simply comment, are fully consistent with and confirming of earlier demonstrations of DoD/NASA market concentration.[9]

Contract values also related with marginal reliability, to a firm's status as prime or sub, indicating that primes have larger contracts (Tau=.39, X^2=4.22). Actually, it is noteworthy that the relationship is not a very strong one. Obviously there are many very big subs.

Finally, we found, too, that contract values tended to correlate with the number of prime contracts held by firms (Tau=.41, X^2=2.84) -- the more prime contracts a firm has held, the bigger those contracts tend to be.

Doubtless at this point some recapitulation is in order. Briefly, considering only our independent or predictor variables, we have described correlations between sales (either Parent or Self) and:

1) Magnitudes of R&D investment;

2) A firm's status as a prime or subcontractor;

3) The number of prime contracts held by a company;

4) The dollar-value of the prime contracts held.

The Mix of Government and Commercial business held by a firm (either Parent or Self) we found related to:

1) Its status as a prime or subcontractor;

2) The dollar-value of prime contracts held.

Contract Dollar-Values were also associated with:

1) Status as a prime or subcontractor;

2) The number of prime contracts held.

In some instances these results have interest in their own right, either because of the magnitudes (high or low) of the relations detected or because of special facets of the relationships involved (e.g., whether parental or self size was the operative factor). We have tried to acknowledge these instances, but have not dwelt on them, for in the present context the real significance of the analyses just reviewed lays in the fact that, for the most part, they revealed no large surprises. Indeed, they doubtless seemed commonplace, even old hat. It may sound rather like making a small virtue of a large necessity, but in point of fact most of the merit

in the data we have been discussing is to be found in their familiarity. Rampant novelty in the outcomes from such analyses would have had to prompt some curiosity as to the adequacy of our research methods, or our definitions of the variables studied, or the modes of analysis we used, or the sincerity of the participating firms. However, the patterns of empirical relations found among our predictor or independent variables, precisely because of their general familiarity, argue for the validity of our instruments, methods and data, even if they can't clinch the matter.

It also bears mention, a propos of this crucial issue of validity, that our data represent the "testimony," as it were, of participating firms. The data's usefulness therefore rests on the dependability of that testimony, something not susceptible of simple test. That our subject organizations took the questionnaire seriously is attested to, however, by several points of circumstantial evidence. First there was their willingness to give the substantial number of expensive man-hours necessary for its completion; secondly we would cite the levels of review it normally received; third, is the fact that more than once the process of completing it became an occasion for serious policy reviews on the part of respondents. Finally, for what it is worth, there is our judgement, based on conversations with personnel responsible for supplying us with the finished questionnaire.

Comforting as these observations are, they plainly cannot

demonstrate by themselves that, even if it was taken seriously, the responses on the questionnaire correspond with any "objective" reality. Often, of course, this is irrelevant, as when the firm is being asked for its attitudes or opinions. Then their responses define "reality." Other times, when behavior or facts are at issue, this is a major question to which we have no unequivocal answer. However, we shall return to it several times in later discussions after we have presented additional data, because we shall rely heavily, as we have just illustrated, on the patterns of findings to certify their own credibility. But later, too, we shall supplement these "boot-strap" operations with references to criteria external to the questionnaire itself that can help lend assurances of the validity of its results. In any case it has turned time to move to more substantive matters.

Organization and Contract Administration

Segregation of Government and Commercial Operations. Organizationally, approximately half the companies we studied at least partially separated their government from their commercial activities. And, in at least one instance where there was no "fundamental separation, such as by division" there was separation by project organization. The firm that structured itself that way was a large company doing the bulk of its business with the DoD. Those firms that did not segregate their government and their commercial business (assuming they had any of the latter) tended to be smaller companies.

This was true of the firms in our special sub-sample and it was also indicated by an overall relation between sales (Parent) and G/C separation (Tau=-.37, X^2=3.44).

At least two (mutually compatible) reasons can be adduced to account for this difference: 1) Smaller firms may lack the resources (capital, personnel) to accomplish separation; 2) Smaller firms may have more government involvement (proportionately) and/or less product-line diversity and hence a weaker need for separation. At any rate, suggestions from a number of sources[10] are that this kind of operational segregation, when it occurs, arises mainly in the form of an adaptation to differences in conditions of doing business in government as compared with commercial markets, differences which apparently have to do with specialized patterns of customer relations (including needs for more extensive contracts specialists and reporting facilities) and variations in quality control problems and methods. However, R&D and project-related technological imperatives may in reality be more basic factors impelling segregated as distinct from simply specialized or elaborated organizational structures.[11]

In fact we did find G/C separation to be strongly related to R&D Investment (Tau=-.62, X^2=9.64). Evidently R&D-dictated "problem-solving-types" of organization mix poorly with the more functional/bureaucratic structures conventional in ordinary production-oriented operations (whether government sponsored or commercial). Suggestive associations could also be found between separation and the G/C mix

of Self (T=-.33, X^2=2.59) and Contract Values (Tau=.37, X^2=2.57).

We conclude, then, that actual separation is chiefly a function of the technological "trigger" vector of R&D involvement, with size also a relevant variable. Business segregation may, in other words, reflect a size-induced organizational differentiation process,[12] the directions of which are technologically guided. The suggestive relations between separation and the other variables seem to imply simply that there must be some technologically relevant product-line diversity and that increasing amounts of government business within the unit itself hastens the differentiation process, as do larger contract dollar-values (by providing resources to support it). We might conjecture that were these latter relations controlled for type of business (i.e., R&D vs production) the observed associations would emerge more clearly.

Contract Administration. From what we have just said a tendency can be inferred for the companies we studied to have, at minimum, some specialized administrative apparatus for conducting government work. They did. And almost always this involved some form of contract administration services if only in the persons of a couple of contracts administration specialists. Possession of such administrative resources amounts to a condition for doing business with the government. Functional requirements for these resources are widely recognized "barriers to entry" into the government market,[13] and organizational limitations on contract administration capabilities doubtless works to discourage bidding on certain contracts. Our

impression has been, however, that, necessary as it may be to have them, the operation of these services, do not, except in obvious ways, vary materially as a function of variations in contract format.

Effects of Contract Type. It was more the exception rather than the rule, for instance, when a respondent stated flatly that they administered incentive contracts, say, differently from other varieties. One firm that did, a medium-size, R&D-oriented electronics company, said that in its operations, "A strategy is established relative to the way in which we will attempt to achieve the maximum positive incentive." Similarly, a large aerospace prime, when asked if it administered some contracts differently from others, answered, "Yes, special administrative controls /are placed/ on incentive demonstrations. Catalog preparation /performance and schedule events/ and approval is /the/ major difference." A technical unit of another large aerospace prime commented that, "All contracts are subject to regular periodic management review. In the case of incentive contracts special focus is given to status, trade-offs and profit impace under the incentive structure." Much more common, however, were simple statements like that of still another big aerospace contractor: "No, procedures are the same."

Moreover, in our data generally, we found tendencies toward closer contract monitoring and control with reference to incentive formulas or opportunities to vary with none of our predictor variables

save for a suggestive association with Number of Prime Contracts (Tau=-.38, X^2=2.29). It seems likely, in this connection, that increasing numbers of prime contracts will be correlated with increasing organizational exposure to incentive-type formats and that, therefore, firms simply accommodate themselves to them. In other words companies adapt their structures and operations to the conditions under which they regularly do business.

Even so, apparently incentives have little effect. We found, in fact, that fully two-thirds of our sample did not adjust contract administration procedures in order to maximize incentive gain. That is, only one-third stated that they adjusted formal regulatory processes to exert closer monitoring or control over dimensions emphasized in contract incentive formulas.

Several firms did comment, however, to the effect that incentive-type contracts tended to get somewhat more managerial attention. One company, for example, in reply to questioning about differentiation of administrative methods said that it practiced none, "except perhaps management is more sensitive to the incentive provisions, but the same cost controls and progress reporting to management is maintained regardless of contract type." Another contractor answered in somewhat the same vein saying, that very few actual administrative differences existed, but "programs are reviewed at a higher level more often when incentives are involved. Additional detailed reports are issued to program managers." And somewhat

similarly, a large electronics company, while professing to "no basic procedural differences" in contract administration, did note that, "Reports, however, are designed to reflect measurement /against/ incentive opportunities."

Interestingly, none of the small contractors in our selected sub-sample accommodated administrative procedures to contract formats (it was the large contractors -- although still only a minority of them -- who more often adjusted, or tried to adjust, to incentive formats or opportunities.) Controlling for government involvement did not seem to offer any prospect of altering these basic relations.

Furthermore, contract incentives appeared to exert little influence over organizational resource allocation. Nearly all contractors responding (i.e., 21 of 23) asserted that incentives had no or minimal effect on resource allocation. Of the mere two firms that said incentives did affect resource allocation, one, a "major systems" member of our "large" sub-sample, explained that "resources may be adjusted to respond most effectively to incentive structures if potential trouble spots arise. However, incentives per se are not the only factors in deciding resource allocation -- program size /and/ difficulty are involved." Echoing these sentiments, another big aerospace prime asserted, "Differing incentive structures have little, if any, effect on these matters. Size and/or nature of the work or project primarily affects such matters."

Diffusion of Awareness of Contract Types. In a context of R&D work we inquired, too, about the extent of awareness throughout a firm of the type of contract (CPFF, FFP, etc.) under which work was being done. By and large (i.e., in three-fourths of the cases) awareness was not presumed to extend below first-line supervision, and often not that low. As one big prime put it, awareness is "not necessarily widespread." This was as true of incentives as of any other contract feature -- working-level personnel rarely were made aware of contract forms, except perhaps incidentally. One smaller service contractor, for example, pointed out that, "Differences exist throughout the organization -- degree of awareness /is/ determined by group operating managers."

It was distinctly unusual for a firm to strive systematically to extend awareness to operating levels. One that did -- a large service contractor -- described itself as having an, "excellent communication system; personnel in the field receive written memos at short, frequent intervals. Home office personnel make planned visits to field offices each year and field personnel visit the home office for one week each year for training and briefing." But limitation on the diffusion of awareness was prevalent among contractors in general, as we have said.

Any variation in "levels of awareness" was unrelated to any of our predictor variables, although, if anything, limitation on awareness was slightly more pronounced among the small firms in our

selected sub-sample, perhaps because they handled fewer different types of contract. If many different types of contracts are handled by a firm it is not unreasonable to suppose that mechanisms will be developed to pass contract terms down the line, insofar as this is pertinent to performance. If little variation in contract format is encountered it is only necessary for operations to be performed according to custom. The decisive consideration here, of course, is whether awareness of contract form is deemed pertinent to performance. Evidently widespread awareness is not commonly so regarded. We surmise that this is so because variations in contract form are perceived to be pertinent to performance except as we shall suggest shortly.

Means of Inducing Awareness. To the extent attempts were made to induce awareness of contract forms within the operating systems of companies, generally speaking, formal communication (in the shape of detailed briefings and/or reviews, contract-based program planning, budgeting or the like) and unformalized supervisory-managerial communication methods were relied upon about equally. This observation applies both to incentive features and to performance parameters.

Illustrative of relatively formal methods were those employed by a large system prime: "Contract briefs, internal work authorizations, contract kickoff sessions of project team, and regular project review sessions." More of a blending of formal and informal methods was the description of "weekly program reviews of cost, schedule and

performance. Incentives are stressed at top levels of supervision and from these people filters down through each functional organization." Much more informal, at least by implication, is the method sketched by a medium-sized electronic component manufacturer which noted that "supervisors participate in the contract and they have profit and loss responsibility." Finally a small R&D outfit relied entirely on "supervisory communication."

The use of detailed briefings and/or reviews (whether written, oral or both) to induce awareness of contract provisions varied suggestively with Sales (Self) (Tau=.32, X^2=2.38). Evidently this method is used more often by larger organizations (a tendency we shall underscore momentarily). Contract-based program planning, budgeting, etc. we found to be clearly associated with a company's status as a prime contractor (Tau=.47, X^2=5.34); use of unformalized supervisory/managerial communication (including distribution of memos, newsletters, etc.), on the other hand, as might have been anticipated, showed signs of being relied on more often by smaller contractors (Self Sales: Tau=-.31, X^2=2.25).

Reinforcing our inference that size makes a difference not only in orientations toward the induction of awareness of contract formats, but also in the methods used for its accomplishment, was the discovery that a pronounced difference existed between the large and small contractors in our selected sub-sample: the large ones relied <u>solely</u> on formal methods of communication, whereas the small ones placed

more importance on unformalized supervisory-managerial channels, even to the point, in individual cases, of depending solely on such methods.

Differences among firms in their means of inducing awareness of contract provisions were not so sharply etched in the instance of production contracts as they were for R&D (highlighting once again the contrasts between R&D and production environments treated earlier). Differences in method as between R&D and production contexts seemed to have to do mostly with the inclusion of "more /internal/ organizations" in the case of production contracts. Differences in method emerged only when contract sizes were smaller: contract Dollar-Value was clearly associated with R&D vs production differences (Tau=-.54, X^2=4.96). Our data contribute nothing to the interpretation of this result, but we are prepared to guess that it means that small R&D efforts are handled informally, whereas small production operations, like large ones, are handled by standard operating procedures.

Focusing somewhat more sharply on incentive structures in contracts, we found that, across all contractors, incentive terms were "passed" through their organization (to the extent they were) about equally often by one of the following methods: 1) By describing incentive structures selectively or in generalities; 2) By detailed recitation of incentive structures; 3) By monitoring projects with reference to incentive structure (usually coupled with periodic review meetings).

One electronics firm, for example, simply distributes "internal documents summarizing provisions of the contracts." Another, however, goes some distance in explaining "how targets and budgets are determined and requirements of higher level supervision for operating levels to meet plans and budgets /are/ established with full knowledge of contract provisions." Furthermore, in this company, "key participants are invariably required to be familiar with contract provisions." In a major engineering firm, "If it is a complex incentive contract, functional departments are informed, along with others, in briefing meetings. If it is a simple incentive contract, simpler means are used." This same firm, however, noted that budget systems, control systems and project meetings or reviews were the "main tool." This third alternative was used exclusively by the large contractors studied, again suggesting that such organizations tend to accord somewhat greater emphasis to incentive provisions and/or to be somewhat better adapted organizationally to actualize their interest.

Again, this time with particular reference to incentives, we probed generality of awareness -- whether incentives were communicated broadly throughout organizations or restricted on some selective basis. As might have been anticipated from our earlier observations, awareness of incentives was twice as likely to be selectively targeted as it was to be extended generally or to be nonspecifically limited.

A large electronics firm, for example, stated simply that,

"The details of incentive structuring are made known to department top-management levels only." And a component manufacturer observed that, "Usually production workers are not aware of profit potentials, but they are aware of incentive pressures." However, speaking for the minority, a large electronics firm said, "Our production workers have been told how much a reduction in costs will add to profits in some cases." Similarly a big aerospace company answered that while "production workers are told /about incentives/ we make no special reports on incentives." Another major aerospace contractor made the point that, "Emphasis is placed upon performance and schedule incentives to which employees can relate their efforts (emphasis added)." And, once more, larger firms showed a tendency toward wider organizational dissemination of incentive features than did their smaller counterparts.

As we shall comment later, it is not always clear that effort can be unambiguously related to incentive structures, but it should not escape attention here that cost incentives (and surely complex incentive contingencies) were not often counted among the things to which "employees can relate their efforts." It seems likely anyway that what is being sought from the incentive is a generalized augmentation of effort and not some specific decision-rule.

Incentives in Subcontracting. Not always impressive for their quality, studies of incentive contracting are nevertheless fairly numerous. Most of them, however, have focused on primes.[14] Yet

twenty of the contractors we surveyed said they had let or received subcontracts with incentive provisions. Sixty percent described their use as "frequent" and 40$ as "infrequent." Here especially size appeared to be an important variable. All of the large firms surveyed had been involved in frequent use of incentive-type subcontracts. Among the five small contractors, two had had no such experience at all and the other three had only infrequent experience. The wording of this question (i.e., "When you subcontract, how often are incentives used?") suggests that this result is not attributable simply to differential amounts of subcontracting. However, it may reflect differences in contract sizes (i.e., major vs minor programs); from our data we cannot tell.

Illustrating the policies and practices of the firms we studied, one medium-size company, when asked if they had let or received incentive-type contracts, answered saying, "Yes, but only under an incentive-type prime and when the nature of the supply or service warrants such action. Occasionally sub-contracts are awarded which contain a bonus for accelerated delivery where schedule considerations are paramount. The most frequent performance incentive used . . . is in the form of a penalty or 'liquidated damages,' but only when schedule requirements are critical." A support services contractor related that it used "performance and delivery incentives to enhance meeting critical dates in a prime contract."

Somewhat more generalized was the argument of a large aerospace

firm: "When appropriate and feasible, Firm Fixed Price contract is used. If R&D is the essence, a cost reimbursement type with appropriate incentives is better calculated to get the right job done." Another similar company also indicated that "firm, fixed-price-type subcontracting is . . . preferable because this normally provides inherent incentives for suppliers to produce high quality hardware." This company did allow, however, that it used incentives, "Where the subcontract is critical to the prime." The response of a large system prime explaining its use of subcontractual incentives was somewhat simpler: "To place /the/ subcontractor under conditions similar to /the/ prime -- make him recognize we have incentives."

Taking rather a different, even blunter tack was a large electronic systems firm which stated that it used incentives in subcontracts, "To enhance the opportunity for the prime to maximize his profits." A big systems engineering and software company explained its views on the subject in terms of efforts, ". . . to match risks and motivations as closely as possible with the prime." Quite magnanimously, on the other hand, a large aerospace contractor said it hoped, ". . . in a few cases, to reduce risks to the sub."

We were able to classify the rationales supplied for use of incentives on subcontracts into three general motivational categories which, in order of frequency of occurrence, were:

1) To induce motivation with an express emphasis on performance quality and/or delivery (n=9).

2) To induce generalized motivation or operational discipline -- to insure that work receives the attention of management (n=5).

3) To distribute risk more equitably (n=3).

When large and small contractors were compared in our selected sub-sample it was found that the large ones distributed themselves across all three categories, with least emphasis on No. 1. Small contractors, however, emphasized this alternative to the exclusion of all others. Thus the small firms appeared to be more "performance-centered" whereas, relatively speaking, the large ones seemed more concerned to distribute risk.[15]

Of more than passing interest in this context are the comments of a smallish support services contractor, more often the recipient than the donor of subcontracts; contracts it believed subjected it to a multiplicity of wide-ranging organizational constraints arrived at "subjectively" by the prime. This sub was persuaded that under such a system, "You cannot exercise good business judgement since you cannot find out which are considered the most important areas that affect your fee."

We should point out, since it may not be obvious, that in asking about a firm's rationale for using incentives in subcontracting (and in salary administration programs, about which we shall speak shortly) we presumed to tap basic beliefs about the functions and utilities of incentive structures in contracts. In other words,

we went on the assumption that the reasons why firms use incentives in subcontracts -- or the conditions under which they use them -- and the use of such provisions in their own internal payment schemes, would tell us something about how they evaluated the use of incentives, and also about how they themselves responded to them in their own operations.

Competition in Subcontracting. We also explored certain other policies regarding subcontracting, at least as regards any dispositions that might exist toward reliance on an "established group of subcontractors with whom you've had a long-term relationship involving the kind of work required." A large aerospace contractor answered this question by saying, "No -- our work is open to all qualified bidders." A support services contractor said, "Subcontractors are selected on the basis of technical qualifications and low bid," adding, however, that "diveristy of work requires this policy."

Such relatively unequivocal insiscences on a consistently competitive procurement policy were not the rule, however. Much more typical are more qualified practices, like those of another big aerospace company which pointed out that, "Generally a competitive philosophy is pursued in circumstances involving special skills, products, etc," but, "continued sole source will be permitted." Another comparable company asserted, "All procurements are bid competitively" but then added the qualification, "except followons," and went on to note further that, "past performance

bears on selection." Still another similar firm likewise said: "Subcontracting is subjected to competition with record of past performance a critical factor due to the high reliability requirements of aerospace programs." Going still a further step down the pike, a smaller engineering-component organization explained that, "Wherever possible the maximum practical number of qualified suppliers are solicited prior to award of a subcontract. Assuming that past relationships have been satisfactory, however, the established contractor will be solicited and his performance will be considered in the selection of the supplier" -- all the while maintaining a "maximum" of competition. Working much the same way was a major electronics company that described its policy thusly: "Subcontracts are awarded to the most capable available source on a competitive basis insofar as practicable. Purchase orders, on the other hand, are most frequently awarded to firms with which we have developed a favorable long-term relationship" -- but again on a competitive basis insofar as possible.

Several respondents expressed a more explicit reliance on established business relations. A big aerospace manufacturer stated, for instance, "Yes, in some considerable part," they did use a "standard" list of subs. Their contention was that, "assurance of competence and dependability to produce what is required and on schedule is thus enhanced." Consistent with this philosophy was the

practice of a medium-size component manufacturer that responded: "Major subcontracts are released to subcontractors who are reputable in their field and who can meet specification and Q. A. approval requirements." Finally, a technical-engineering outfit put it most simply and directly: "Yes -- to /the/ most efficient and usually qualified vendors."

Reliance on "pure" competition in sub-contracting was thus clearly attenuated among our respondents, although most would probably endorse the principles of a large support service contractor that described a policy of relying on an established list of subs, "but only to the extent that they can meet competition." Moreover, a big system/software prime undoubtedly spoke for many others when it said that, "new sources are constantly sought /in order/ to benefit by the rapid advances in state-of-the-art inherent in R&D work."

The tendency to depend on established relations, especially for on-going and followon programs was justified this way by one large aerospace prime:

> a) The cost to the program of providing tooling and test equipment to new sources, the cost of modifying existing tools and test equipment to fit the new suppliers' facilities and the cost of supplemental tooling because the new source does not have the same capital equipment reduces the savings to the program. b) The cost of requalifying products manufactured by new subcontractors. c) The risk of schedule non-support and unacceptable levels of performance and reliability due to the new source's unfamiliarity with the problems of the program."

Expense, trust, risk and familiarity, therefore, emerge as pressures constraining against exclusive reliance on the competitive selection of subcontractors. This being so, one would surely be justified in presuming that things would be little different in the selection of primes, procurement regulations and what not to the contrary notwithstanding.

Use of Incentives in Organizational Reward Systems. For reasons we have outlined in previous passages, our questionnaire included the following question: "Does your organization employ any form of wage incentive plan (i.e., any system for providing extra monetary payments or other considerations convertible to money -- e.g. stock -- in direct relation to individual, group or company performance)?" Responses to this question were highly varied, but, by and large, such internal incentive systems were confined to management levels, often to executive levels. A component manufacturer, for example, relied chiefly on managerial stock options, but added that the "company has awarded to personnel bonuses for performance or achievement," but not at levels below the supervisory. Fairly typical was the response of a systems engineering/support contractor which said it used a "management incentive compensation plan /in which/ approximately 2% of our employees participate. They receive incentive compensation awards based on both organizational and individual performance as measured against previously established goals." Along the same lines was the plan described by a major electronics

firm: "Management incentive compensation is awarded annually to top-management and second-level management based upon corporate (our emphasis) over-all earnings and contribution by the individual."

Partially inverting this practice was a big aerospace company which had no incentive plan for top management, but for middle management: "An incentive compensation plan is used whereby those employees whose performance during the previous fiscal year is exceptional are recognized by substantial but variable monetary increments. These awards are recognized through supervisory channels, reviewed by Division /management/, and approved by the Group President's Office." This firm, however, also had a "selective" stock option plan oriented to "key officers" and designed to keep them with the company. Somewhat more involved was the scheme used by a large aerospace manufacturer which described a "management incentive plan for executives, /based on/ annual rating of individual performance; special awards (bonus) for middle management, /also dependent on/ individual performance; discretionary stock options for executives; a salary adjustment plan involving merit and promotional increases for all salaried employees, /but/ no general or production workers' profit sharing or piecework plan."

Reviewing the various plans described by our respondents, it was evident that they were frequently selective and/or subjective, but it was not always clear just how incentive awards were correlated with discriminable individual or work-group effort even though this

commonly was an intention of the plan. For example, one big aerospace prime sketched a generalized program consisting of a "performance bonus to all employees based on end item delivery." An electronic component manufacturer said it used a, "1) subjective bonus plan for division managers for outstanding Division results;" and "2) cash profit sharing for the whole company." Combining nearly all the features of non-specificity, selective targeting and subjectivity already noted was the practice of a major support contractor according to which "all salaried employees participate in a savings and stock plan which allows them to save /a percentage/ of gross salary and have the company match it 50%. Senior executives participate in an annual supplemental compensation distribution which averages about 10% of their annual salary."[16]

Some Conclusions and Judgements Regarding Incentives. In our sample almost twice as many contractors (15 vs eight) did not structure organizational regulatory processes to coincide with incentive formats as did. Closer monitoring and control was not commonly exerted in the direction of incentive formulas or opportunities. It also appeared that in practically no cases did incentives materially affect resource allocation. From these findings it seems apparent that incentives have little or no substantial effect on gross (macro-scale) organizational structures or processes.

Regarding the targets of incentives: in the majority of cases, awareness of the incentive structure was concentrated at managerial

levels -- incentives are directed at the contractor's managerial personnel (where they may have some real informational or "attention-getting" effects about which more in a moment). Furthermore, this is altogether consistent with the fact that most intra-organizational wage/salary incentive schemes focus both loosely and selectively on managerial personnel and it harmonizes, too, with usual policies and practices in the subcontractual use of incentives. Implicitly or explicitly, wittingly or unwittingly it is the managerial mule that is being prodded with the incentive 2x4. Moreover, it would appear that, to the extent contractual incentives are used to galvanize effort, they are oriented more toward schedule and performance than toward cost parameters.

The pertinent questions then become: what are the intended effects of contractual incentives on organizational and managerial performance? In the first place, it must be regarded as dubious that they work directly to induce "cost-consciousness." More likely they work organizationally in opposed directions by emphases on performance and schedule. For this to operate to enhance cost control, one would have to assume a strong and well orchestrated managerial program in counter-point to it. Secondly, if incentive structures are intended to "motivate" managers or to control their decisions, it must be true that managers are evaluated with respect to their performance (or the performance of the organizational units or functions for which they are responsible), not just generally, but on incentivized contractual dimensions. Evaluation does show signs

of at least approximate relevance to individual effort, but there are no real indications that this bears much relationship to incentive features of individual contracts. It more likely relates to overall performance. It is possible, of course, that incentivizing aspects of the managers' tasks or work environment provides him with information useful to the effective organization of his responsibilities by indicating things that his evaluators think important. This, however, is a complex issue that will have to await another time for extended discussion. For the present we can do no more than hint at the possibility that incentives serve mainly an "advisory" function influencing, but not controlling decision and performance. From such a standpoint the effects of contractual (or any other) incentives could only be evaluated from a knowledge of their relations to contextual elements at the time of decision and action.[17]

The broad situation regarding the operation of contractual incentives, including their susceptibility to being "washed-out" by "extra-contractual influences" was nicely summarized in the remarks of a large aerospace-electronics firm, which we quote at length.

> . . . in reviewing the events of the past few years involving /the/ performance of major aerospace contractors . . . there is one motivation that stands out above all others. This is the determination of a major defense contractor to design and produce a product, which, when held before the TV cameras and newspapers of the nation, will perform 100% the first time. This stems from concern over his continued

> success in the defense marketplace and the realization, in the case of many with commercial enterprises, that any tarnish on the corporate image may lead to a damaging decline in acceptance of the company's commercial products. Genuine concern over technological leadership and the quality of the country's defense capabilities are also major factors . . .
>
> There is no cost incentive which will deter the contractor from incurring costs to assure successful performance; nor are the cost, performance and delivery incentives as strong a motivation as the contractor's own determination to achieve successful performance. Examined in the light of the cost target for any one contract, this may appear to be flouting intended controls. Consider, however, that a spacecraft which fails in its mission and wastes a booster has cost the Government many millions of dollars. In most cases, the flight has to be repeated. The experienced loss is far greater than the extra money that might have prevented the failure.

So much for contractual incentives, for the moment at least.

Contracting Goals and Business Objectives

In our questionnaire we undertook to develop information about both concrete contracting (negotiation) goals and about more general business objectives, such as profit targets and related financial orientations. What we wanted to learn more about were the general standards by which companies evaluate themselves and also the kinds of goals they generally set for themselves when negotiating specific contracts.

General Business Objectives: Profit Targets. Among other things we were interested in getting some idea of the kinds of profit levels firms saw to be "high" or "low." These had long seemed to us "fuzzy" notions. Furthermore, Katona has pointed out the need for

more information about the profit and other standards around which businesses organize their decisions, commenting on how little is "known about prevailing group standards and values (p.98)."[18] We asked about both return on sales and return on investment, but got little useful response to the latter, so for the present we shall refer only to sales. Later we shall speak again to the matter of ROI.

When queried about what they conceived to be a "desirable" going-out profit (after taxes): five firms said 3-5%; eight said 6-9%; and nine said 10 or more percent (five didn't say).

As regards a low (after tax) profit level, however, the mean figure was 5.9%, but with a standard deviation (s) of 2.2 and a range from a minimum of two to a maximum of 12%. The mean figure cited as representing a high profit level was 11.5%, with a s of 3.2 and a range from 6-20%. Obviously, then, there seems to be nothing like a standard reference point as regards "high" and "low" profit levels. Variability of viewpoint was plainly the rule and, indeed, the aggregate distributions of high and low figures exhibited considerable overlap. One man's elixer is plainly another's poison. What profit one manager might see as high another might see as low, and vice versa.

As might be expected, company size was a factor contributing to this differential profit perception. In our selected sub-sample, for instance, the small firms responding to the question tended to look upon a going-out profit of 6-8% and upward as "reasonable,"

whereas the larger companies thought 6-8% and downward was reasonable.

By the same token, on the average, small companies described a minimum acceptable profit level as 6.25% (with a range from 5-8%), while large ones said they were willing to settle for 5.3% (range: 3-7%). Even more divergent were comparisons for maximum (or high) limits of an acceptable profit range. All five small firms listed 15% as the approximate upper boundary of an acceptable range; the large firms averaged 9.0% and ranged from 6-12%.

Seemingly, then, larger contractors think substantially "smaller" about profit rates than do small contractors. Actually, in our data as a whole, clear relations between acceptable going-out profits (as percents of sales) and firm size (Parent Sales) were discernable (Tau= .42, X^2=3.96). Firms with high sales plainly were prepared to accept lower profit rates (or at least said they were). Very possibly larger firms with larger contracts, orient themselves less in terms of profit rates and more in terms of absolute profit dollars, which would not be surprising anyway in view of budgeting methods and the absence of standard benchmarks for profit rates. But this tendency was still more pronounced among firms with a higher ratio of government to commercial business (G/C Mix, Parent: Tau=.60, X^2=7.46), and among prime contractors (Prime vs Sub: Tau=.57, X^2=7.06). Thus not only do large firms think smaller about profits, but (and even more) so do prime contractors with heavier relative percentages of

Table 1

Mean Rankings for Total Sample and Select Large and Small Sub-sample of Functions of Profit

(Listed in Rank Order by Overall Means)

Function	Total* $\bar{X}$	Total* s	Large[a] $\bar{X}$	Large[a] s	Small[b] $\bar{X}$	Small[b] s
Enlarge capital base (growth)	2.46	.81	2.5	.5	2.7	.7
Pay stockholders and attract capital	2.54	1.77	2.0	1.7	3.1	1.7
Meet current capital requirements	2.68	1.30	2.0	1.0	1.5	1.1
Finance internal IR&D	4.00	.96	3.5	.86	4.0	1.3
Measure overall performance effectiveness	4.02	1.43	5.0	0	4.6	.7
Other	5.11	1.52	6.0	0	4.6	.7

* n = 22
a n = 3
b n = 5

government business. This may, of course, reflect an adaptation-level-like anchoring of expectation by previous experience, with profits earned in the past controlling standards for future expectancies. Or it may reflect a diminished need for high profit rates and margins among large government primes, a state of affairs that could arise from their often favorable cash-flow situation. Most likely both factors are involved.[19]

The Functions of Profit. Some interesting things can also be discerned from the ordering of the functions to which profit is put (cf Table 1, where the listed means are average ranks). It will be noted that growth is first in importance, paying stockholders second and providing operating capital third, although each one crowds the other. However, there is much less variability in the rankings of growth than in those for paying stockholders, suggesting that the former is more consistently seen as important than is the latter.[20]

One large aerospace contractor declined to rank these functions arguing that they were essentially "inseparable" and that, in any case, "priorities continuously change." Now undoubtedly this is true. Goals and other motives are dynamic, shifting in some degree with circumstance. However, it is also true that some goals tend to be more important than other goals more of the time. Thus, in general a particular pattern of hierarchy of goals may prevail. In fact we found, in the full sample, that the rankings of contracting goals "scaled." That is the correlation (or concordance)

across all rankings (i.e., rankings by firms) was sufficiently high ($W=.34$, $p < .001$) to allow the conclusion that the hierarchical order of the goals listed in Table 1 is a stable one, even though specific averages might vary in a new sample.

Still it is well to remain mindful of the dynamism of goal structures.[21] The one we have described prevailed at a point in time. At another time it might be somewhat different. And, in a given situation, for a particular firm, "priorities" might indeed change. The patterns we are describing, then, are necessarily to be understood as relative to time and circumstance. But, since the firms doing the ranking represented somewhat varied circumstances, and since the interval over which the research extended covered a considerable period, these patterns may be expected to be fairly stable, baring catastrophic events, of course.

Looking at our selected sub-samples of large and small contractors the former can be seen to follow closely the pattern of the overall sample except for a heavier weighting on using profit to meet current capital needs. Nor are the small contractors radically different, although they put an even stronger emphasis on the monetary and growth functions of profit. Thus, allowing for the fact that differences are not great and that large and small firms may exhibit minor variations from the overall norm, it would seem that needs for profit in order for firms to provide a return to shareholders is not as prominent as conventional business rhetoric might lead one to think.

Contracting Goals. In addition to their larger business objectives, we were hopeful of learning about the more specific requirements companies set for themselves in seeking government contracts. Therefore our questionnaire probed for the existence of "any special policies guiding the kinds . . . of . . . contracts" that might be sought or accepted, "or setting conditions relative to bids or proposals." Few were found other than the obvious one expressed by a big aerospace contractor: "Degree of risk and job complexity." Some firms, like one large systems engineering firm, indicated, for instance, that, "If the customer is adamant on fixed price for R&D, then a no-bid decision is a distinct possibility." Also noted with some frequency was the practice of one support service contractor which required "different approval levels for various types of contract." An independent R&D laboratory, for example, stated that, "If other than CPFF is quoted, special review at V. P.-level is required. And grants require Chief Executive review." One component manufacturer sounded another note, saying that its "basic policy would prohibit going after contracts which would give the government unlimited rights to design and manufacturing." None of our predictor variables was found to discriminate variations in these policies.

That contractors mount extensive "intelligence" and marketing efforts with procurement agencies in respect to program development and are frequently disinclined to formulate serious proposals without

Table 2

Frequencies and Mean Responses of Total Sample and Select Large and Small Sub-sample To Question: "When Contracting, and Especially for R&D-type Work, How Important Does Your Management Believe It to be That The Specific Contract: (Responses Listed in Rank Order of Overall Mean Rating on a Six-point Scale)

Goal	Total $\bar{X}$	Total s	Large $\bar{X}$	Large s	Small $\bar{X}$	Small s
Foster quality performance E=18* D= 5 N= 2	5.00	1.71	4.4	2.3	5.0	2.2
Protect the contractor against risk E=16 D= 9 N= 0	4.92	1.47	4.8	1.6	4.8	1.6
Safeguard proprietary interests E=17 D= 6 N= 2	4.88	1.74	5.0	2.2	4.8	1.6
Offer operational flexibility E= 9 D=16 N= 0	4.08	1.47	4.8	1.6	4.8	1.6
Stimulate high levels of contractor/ government communications E= 6 D=17 N= 2	3.56	1.50	4.2	1.6	3.8	2.1
Engender high degrees of motivation to control costs E= 6 D=15 N= 4	3.40	1.66	3.2	1.8	2.8	2.0
Yield a high profit level E= 4 D=19 N= 2	3.24	1.39	2.8	2.0	3.0	0
Reduce government technical direction or surveillance E= 2 D=19 N= 4	2.92	1.19	3.2	1.8	3.6	1.3
Foster program discipline (scope, methods, procedures) E= 5 D=10 N=10	2.80	1.87	2.2	1.1	2.8	2.0

* E = Essential; D = Desirable but not really essential; N = Neither essential nor even desirable.

some minimum prior familiarity with the birth and growth of the R.F.P. is widely recognized. But it happens, too, that contractors needful of sales or hopeful of followon work will feel obliged to accept contracts they believe are undesirable (e.g., fixed price development contracts), albeit sometimes with hopes of subsequent changes. As a generality, one gains the impression from contractors of a relative paucity of positive policy planning or guidance in these areas. What seems to prevail instead is a predilection toward taking opportunities as they come, coupled perhaps with attempts to make them come regularly and palatably.

Our questionnaire also contained a section we described as tapping "contracting goals" -- i.e., what sorts of things people (firms) thought it important to accomplish when negotiating individual contracts. The specific questions and the responses to them are reported in Table 2. Notice that the items are listed in order of the importance attached to them, on the average, by the total group of firms that responded to this set of items. The pattern is very interesting.

For instance, it will be seen that the most important single contractual objective turns out to be "fostering quality performance," followed in order by "protect the contractor against risk" and "safeguard proprietary interests."

At the bottom of the list in importance one finds "reduce government technical direction," "foster program discipline (scope,

Table 3

Pearsonian Intercorrelation Matrix of Contracting Goals (N=25)

Goal*	1	2	3	4	5	6	7	8	9
(1) Protect against risk	--	-.13	.05	-.12	.19	.20	.24	.23	.07
(2) Operational flexibility		--	-.01	.27	*.35*	*-.35*	-.18	-.04	-.07
(3) Discipline			--	-.08	-.15	.04	*.73*	*.43*	*.43*
(4) Reduce direction				--	.28	-.10	.04	-.18	.29
(5) Proprietary interests					--	.07	-.01	-.26	.24
(6) Quality performance						--	.26	.10	.18
(7) Control costs							--	*.38*	*.75*
(8) Stimulate communication								--	*.35*
(9) High profit									--

Note: Italicized coefficients are statistically significant at p=.05 or less.

* See Table 2 for statement of goals.

etc.)," and "yield a high profit." That the contract should "offer operational flexibility," "stimulate high levels of contractor/government communication," or "engender high degrees of motivation to control costs" were regarded as intermediate in importance. It is true that, on the average, some importance was attached to each of the goals listed, but that's not really surprising since, after all, they all are goals. Indeed what is truly surprising is that any of the mean ratings were as low as some of them are.

Examination of the item intercorrelations (see Table 3) yields some more interesting discoveries. For one thing, provision by a contract of operational flexibility was positively (though not very strongly) related with safeguarding proprietary interests, but it was inversely related with fostering quality performance. This "conflict" or ambivalence in the relation between flexibility and two other highly valued contracting goals probably accounts for its own rating as being of intermediate importance.

A second discovery is that "Stimulate high levels of contractor/government communication," although itself rated comparatively low in importance, was the item most often entering association with others. For a contract to contain such features was correlated with an emphasis on fostering program discipline and gaining high profits. It was also related directly and more strongly with engendering high motivation for cost control. Thus, if a contract induces high levels of contractor/government communication (not,

be it noted, government technical direction), it seems to be thought that program discipline, cost control and profitability will be enhanced.

Actually, and this is a third discovery, a clear complex or cluster of interconnected contracting goals can be discerned: i.e., program discipline, communication, cost control and profitability. When one is viewed as important so do the others tend to be, with relations between discipline and cost control, and cost control and profit being especially strong. However, it will be remembered that each of these goals was individually rated as no more than intermediate in importance. Essentially, they constitute a coherent cluster of goals to which this group of respondent companies attached low importance (relative to other goals).[22]

It is possible to see emerging from these analyses an overall picture of risk-averse contractor organizations not so much concerned about cost control or maximizing profits, but oriented strongly toward performance and the maintenance of working relations with the customer, while at the same time hoping to sustain a separate "bargaining position" vis-a-vis the government (by controlling useful information).

Factors Affecting Contracting Goals. It should be noted that there was a good deal of variability in the ratings, thereby suggesting quite extensive diversity of viewpoint. Among the things that may be relevant to explaining this diversity is

company size. Our data were not clear on the point, but, compared with small contractors, Table 2 shows that large firms could be construed as somewhat more concerned with proprietary interests, communication and costs, but less performance-oriented, less concerned with profit (as we have already detected) and also with autonomy (cf. "government direction"). It is by no means certain, because the relevant data are somewhat mixed, as we shall see presently, but one might still speculate that the large firms in our sub sample were more oriented toward getting government contracts than were the small ones and therefore were more cost-conscious (in line with government expectations), more oriented toward proprietary matters as a means of securing their market position via "know-how," and more disposed toward "responsiveness" than toward autonomy.

Taking the several contracting goals in individual relation to our predictor variables, however, indicated that diversity of viewpoint was largely in the nature of individual differences -- idiosyncracies of individual firms. Our predictor variables produced relatively few discriminations among contracting goals. For instance, "Protect against risk, "Offer operational flexibility, "Reduce government direction, "Foster quality performance, "Engender cost control, and "Stimulate communication" all varied independently of any of our predictor variables. That is, for example, large firms, as a total group, responded no differently to these

particular items than did small ones; by the same token, firms with heavy R&D involvement responded in the same way as those with lighter R&D investment, etc.

Those goals that were sensitive to our predictors included: "Foster program discipline," which exhibited a suggestive inverse association with R&D investment (Tau-C=.45, X^2=5.00).[23] Firms with heavy R&D involvement, thus, may be less concerned that their contracts foster program discipline.

"Safeguarding proprietary interests" showed a very tenuous relation with number of prime contracts (Tau-C=.28, X^2=5.69). What gives this finding importance is strictly the fact that it fits the larger possible pattern described above (i.e., bigger firms showing more concern with proprietary matters). Much the same can be said of our finding something of an inverse relation between stressing that contracts "Yield high profit" and magnitude of R&D investment (Tau-C=.33, X^2=5.21) -- it may be that the heavier a firm's R&D involvement, the less concerned it is with contract profit. As a matter of fact, however, we shall show later that R&D investment does seem to work as a basis for profit forecasts.

In addition to these discrete analyses three *a priori* indexes were devised by combining separate "contracting goals." It was the purpose of these indexes to provide a rough impression of the kinds of general emphases that might be present in contractors'

Table 4

Pearsonian Item Intercorrelations and Whole-Part Correlations for F-Index ("Financial Concerns")

Item*	1	2	3	4	Total
(1) Risk	--	.19	.24	.07	.56
(2) Proprietary		--	-.01	.24	.57
(3) Control Costs			--	.75	.74
(4) Profit				--	.77

Note: Italicized coefficients statistically significant at p=.05 or less (N=25)

* See Table 2 for statement of items

Table 5

Pearsonian Item Intercorrelations and Whole-Part Correlations for P-Index ("Performance Concerns")

Item*	1	2	3	Total
(1) Flexibility	--	-.01	*-.35*	*.32*
(2) Discipline		--	.04	*.73*
(3) Quality			--	*.48*

Note: Italicized coefficients statistically significant at near p=.05 or less (N=25).

* See Table 2 for statement of items

Table 6

Pearsonian Item Intercorrelations and Whole-Part Correlations for R-Index ("Relationship Concerns")

Item*	1	2	Total
(1) Reduce direction**	--	.24	.76
(2) Stimulate communication		--	.82

Note: Underlined coefficients statistically significant at p=.05 or less

* See Table 2 for statement of item

** This item was reverse keyed for purposes of this scale

negotiating objectives. The indexes devised were: 1) a four-item F-index, expressing emphases on "financial goals;" 2) a three-item P-index intended to reflect emphases on "performance goals;" and 3) a two-item R-index tapping stress on building customer "relations." For each of these indexes item intercorrelations and whole-part correlations (i.e., correlations of items with the total index score) are displayed in Tables 4, 5 and 6. It should be noted that the whole-part correlations in these tables are uncorrected for contributions of the individual items to the totals; such correction could be expected to reduce their magnitudes, especially in the shorter indexes. As might be expected, as scales, these indexes are heterogeneous; homogeneity ratios calculated for each of them, for instance, rarely exceeded .25, indicating that variances in total scores are attributable to a plurality of sources (i.e., although the F-index expresses concern with financial goals, it is by no means a "pure" measure of such concerns). Sample sizes and other considerations did not justify searching attempts at scale analysis of these indexes, especially since the patterns of item intercorrelation and whole-part correlation were, in general, acceptable as approximations. That is to say, a "good" scale is one in which individual component items are uncorrelated, but in which each item is substantially correlated with scores based on a sum of all items. Then it can be judged that each item contributes uniquely and positively to the measurement of some single broader

variable. The indexes we used came close enough to satisfying these conditions to satisfy us of their provisional utility.

Expanding on this, inspection of Table 4 shows, with one exception, a lack of correlation between the four items defining the F-scale: "Protect the contractor against risk;" "Safeguard proprietary interests;" "Engender . . . motivation to control costs;" and "Yield a high profit." The exception is that the latter two items, as we already have learned, correlate significantly, which leads to the conclusion that they are in part redundant. The other items all seem to be measuring different things; however, each one correlates with a total score obtained by summing responses to all four items. This suggests that, as a group, the items are measuring facets of a common but complex variable, "financial goals." We shall talk further about this index shortly, but first we shall inventory the properties of the other two.

The pattern of correlations for the P-index may be found in Table 5. Clearly this index is less well defined than the F-index. For one thing the item, "Offer operational flexibility" seems not to fit well with the other two scale contributors: "Foster program discipline" and "Foster quality performance." As might have been anticipated, flexibility and discipline are perceived as incompatible, if only moderately so, and "quality of performance" bore only a moderate relationship to the total score. Although each was significant and pulled in the same direction, discipline was the one of

Table 7

Raw Scores, Means, Medians and Standard Deviations by Company for All Indexes.

Firm	F	P	R	I	C	E	D	M	H
6	24	12	9	7	16	31	10	17	11
7	16	13	6	--	28	34	9	18	10
10	11	8	6	12	33	--	9	--	--
11	18	12	6	7	27	28	11	12	12
15	13	8	2	--	--	--	--	19	17
17	15	15	6	7	36	33	15	19	14
18	18	12	6	--	33	45	8	17	18
20	15	10	9	6	25	37	10	22	14
24	18	15	9	--	32	34	9	13	12
26	12	15	9	4	28	25	12	13	11
28	10	12	6	7	28	28	12	14	11
29	18	12	6	12	--	27	5	14	12
30	11	9	12	12	30	33	9	18	14
31	15	12	6	7	26	27	5	14	15
32	24	12	7	9	27	30	6	14	14
33	18	10	4	12	25	29	9	12	9
34	18	15	6	7	29	30	6	12	15
35	18	13	6	9	--	--	9	--	--
36	12	12	6	12	32	32	10	13	13
38	24	15	12	7	29	21	4	9	11
39	11	7	9	--	31	32	11	15	13
40	18	10	6	9	28	33	6	17	13
41	15	10	6	9	28	28	7	16	10
42	18	10	6	9	27	32	5	15	13
43	21	18	6	9	24	29	6	11	14
Median	18	12	6	9	28	30.5	9	14	13
Mean	16.44	11.88	6.88	8.65	28.27	30.82	8.46	14.76	12.16
S. D.	4.021	4.597	2.178	2.286	3.956	4.619	2.677	2.39	3.00

the three individual items contributing most strongly to the "performance goals" index.

Turning to the R-index, Table 6 reveals a lack of correlation between the item dealing with government technical direction and the one having to do with communication. However, both relate well enough to a pooled "relationship goals" index.

Now some results from analyzing these indexes: Table 7 lists the raw score for each company in the sample on each index (including four others we shall discuss presently) along with sample medians, means and standard deviations. For the F-index a score of "24" was maximum and a score of "12" would indicate that it was viewed at least as "desirable" for contracts to satisfy financial objectives. The corresponding scores for the P- and R-indexes are "18" and "9," and "12" and "6" respectively.

With respect to both the F- and P-indexes, more than 85% of the respondents saw it as at least "desirable" that both company financial and performance goals be satisfied by contracts. Indeed, average scores on both scales tended toward maximum (or "essential") values.

Four firms, however, did produce "low" scores on the F-index. Of the four, one was a large aerospace prime contractor; another was a large division of a major aerospace-electronics prime contractor with a very strong commercial business; a third was a comparatively small, technically-involved service division of a

much larger "synergistically diversified" firm; the last was a medium-size, almost entirely commercially-oriented manufacturing division of a large conglomerate. Review of sales, earnings and growth figures revealed no strikingly obvious distinguishing features common to these companies, each of which produced low F-index scores.

However, among the three firms generating "low" scores on the P-index were two of the four firms with low F-index scores (the first and last mentioned in the preceeding paragraph). The third was a small, high-technology component manufacturer. Again no strikingly obvious commonalities could be discerned among these three organizations -- but we shall return to the matter shortly.

In the meantime, the R-index: unlike the F- and P-indexes which, on the average, reflected about equal organizational interest in satisfying broad financial and performance goals, the R-index suggested substantially lower concern with relational goals. Scores tended to cluster around the median. It should be noticed though that almost all firms thought it at least "desirable" to achieve such objectives. Of the three respondents producing very low scores, one was the commercially-oriented manufacturing division mentioned above; a second was the small component manufacturer noted previously; the third was another somewhat larger, high technology component manufacturer (with heavy R&D involvement). The two firms having very high scores were both large aerospace-electronics primes.

Thus, there were suggestions that de-emphasis on relationship objectives is associated with commercial and/or general manufacturing operations or status as a component sub, whereas emphasis on them is associated with status as a large aerospace-electronics prime. Correlational analyses revealed no significant relation between R-index and F-index scores ($r=.29$, $p>.10$), but did reveal a significant, if low, direct relation between R-index and P-index scores ($r=.39$, $p<.05$). The P-index and F-index correlation was a moderate .45 ($p<.25$), and a t-test of the difference between their means was non-significant. The average Pearson r among the three indexes was .38, suggesting a general tendency for them to move up or down together (altnough with a good measure of independence). Some part of this co-variation is undoubtedly attributable to the impurities of the indexes used, specifically, to the presence of cross-index item correlations. The inter-correlation of the indexes, in that sense, is partly spurious. There is, however, sound reason to believe it not to be wholly so. Taken collectively, what our data convey is the message that contractor concerns with financial goals, performance objectives and customer relations are not unidimensional. They consist of concrete tactical components which interconnect in various, and probably variable, ways as means to larger organizational strategic objectives.[24] We shall discuss some further implications of the linkages of contractor motivations after some additional findings are reviewed.

Doing Business with the Government

As regards organizational views, attitudes and intentions relative to contracting with government agencies, we inquired (among other things) about whether the firms we studied were disposed to give more or less emphasis to government contracting than they had in the past. Only one indicated it was giving more emphasis. Eleven foresaw no significant change, but 13 planned less emphasis (two didn't say).

Desired Government/Commercial Business Mixes. We also asked what these firms regarded as an optimal mix of government and commercial business and received highly varied responses, as one would expect, especially given that some of these organizations existed almost solely to do business with the government. However, when we compared the high and low ends of the ranges mentioned, the tendency was clearly to select as optimal some amount of government business between 25% and 75% of total volume.

Factors Affecting Perceptions of an Optimal Mix. Since our questionnaire item dealing with optimal mix called upon the respondent firms to indicate a range of values, we analyzed separately the Low and High figures they mentioned. With regard to the latter, the existing G/C mix of the Parent firm exhibited a clear association with the upper limits of the optimal ranges specified ($T=.54$, $X^2=6.63$). In other words, if a firm's current mix is over 50% government, they tended to see over 50% as a good place to be. The G/C mix of the

Self was less clearly related (Tau=.40, X^2=3.64), but consistent in direction.

Taking the Low figure of the cited range as the criterion, some relationship with Parent Sales could be detected (Tau=-.40, X^2=3.63). Bigger firms tended to view as optimal a lower percentage of government business than did smaller ones.

Finally, once again the current mix of the Self's business showed some correlation with the perceived optimum (Tau=.37, X^2=3.16).

Focusing attention on the sub-samples of large and small contractors somewhat confirms the size trend: a slightly greater fraction of the smaller firms (four of five) were disposed to reduce their emphasis on government contracting than was true within the group of large firms, three of five of which were so disposed. However, the four smaller organizations that wished to reduce their government contracting emphasis still considered an optimal government/commercial business mix to be at least 50% government. (In fact, two of the four considered 75% or more government business as acceptable.)

On the other hand, four or the five large contractors found a government/commercial business mix of less than 50% government acceptable. Three of the five did not find optimal any mix that contained as much as 50% government business.

Attraction to the Government Market. Several points should be made about these findings. First, no wholesale tendency for companies to flee the government market should be inferred from them. Such

inclinations might characterize an occasional firm, but most were oriented chiefly toward reducing the proportions of their government business, principally by increasing the comparative amounts of their non-government (to be read, Federal government, even NASA/DoD) business.[25] Thus, except in a relative sense, contractors could not be described as looking to leave the Federal market; however, they certainly were looking to reduce their dependence on it, which leads us to a second point.

Small firms evidently are more disposed to reduce their dependence on the government market than are large ones, probably because they start at a higher level of relative involvement. Yet, the small companies seem willing to settle for greater dependence than are large ones, perhaps partly because they perceive themselves to have fewer alternatives (in our earlier discussion of contracting goals we perceived signs that smaller firms were more concerned with the autonomy issue), but possibly also because these kinds of preferences reflect a kind of incremental constancy of growth. That is, because they start with different values -- one lower, one higher -- small and large firms may end with different values simply by subtracting a "constant" from their initial values. This, of course, would forecast a progression toward zero percent of government business, albeit at differently arrived-at points in time. This, for several reasons, is unlikely in the extreme.

One further point should be made, even at the risk of seeming

to contradict some of what has just been said: allowing for exceptions to the rule, companies (i.e., as distinct from personnel within companies who may, as individuals, have different interests), by and large seem not to find doing business with the government (or at least with NASA and DoD) inherently attractive. Attraction seems to be mainly extrinsic and dependent chiefly on the availability of alternative markets (together, possibly, with such subtle pressures as patriotism, or such not-so-subtle pressures as government requirements).[26]

Contractors View their Status

Our questionnaire contained a number of questions and rating scales designed to help us gain an impression of how the firms in our sample judged their situations and their prospects. In one sense these ratings can be thought to tap into "corporate self-concepts;" in another sense they may be more appropriately viewed as simple statements of organizational perceptions of the "states of affairs" under which they presently operate and expect to operate in the future. Both elements are doubtless involved and it would be hard to decide when to stress one and when the other.

Investment Levels. When asked about their levels of capital investment relative to averages in other industries for firms with comparable sales, seven contractors in our sample described theirs as "probably lower," eight as "about the same," and six as "probably higher" (six didn't answer). Thus comparing themselves with firms

Table 8

Item Intercorrelations and Whole-Part Correlations for I-Index ("Aggregate Investment")

Item	Capital Investment	Personnel Investment	Total Investment
Capital Investment	--	.01	*.95*
Personnel Investment		--	.33

Note: Italicized coefficients statistically significant at p=.05 or less (n=18)

in other industries in regard to capital investment, the companies we queried distributed themselves about evenly across all three response alternatives.

However, ratings of capital investment and of personnel investment were uncorrelated (see Table 8). When asked about their investments in technical/engineering personnel, seven firms didn't answer, one said they were lower, and one said about the same. The remaining 16 said their investments were higher than those of comparable size companies in other industries. Thus, as a group, the organizations surveyed saw themselves as having heavy personnel investments, if not necessarily such heavy capital investments.

As a result, a composite Investment Index (cf. the I column in Table 7) showed 85% of the contractors studied to believe their overall levels of investment to be above the averages for other industries -- and substantially so, for a score of "12" is the highest possible on the scale and a score of "6" reflects a judged investment level "about the same" as that of other industries. Obviously, though, this judgement rests on a belief in much heavier-than-ordinary personnel investments, something not commonly accounted in reckoning investment levels. So strongly did one small component manufacturer feel about this that it felt constrained to comment as follows on the issue:

> Return on investment (current accounting definitions) is not an appropriate measure of performance either on a project or in total and will not be until a mechanism

Table 9

Means and Standard Deviations of Responses by Total Sample to Status Assessment Items

Item	$\bar{X}$	s
1. Physical plant capability currently employed (relative to normal operations):		
50% or less -- near total *	4.44	1.53
2. Future expectations concerning availability to your industry of government business:		
less work -- more work	3.84	1.43
3. Fixed overhead costs: (relative to industry averages)		
relatively low -- relatively high	3.96	1.37
4. Staff capability currently employed:		
significant under-utilization -- near total utilization	5.04	1.02
5. Payroll expenses pertaining to technical personnel:		
fixed -- variable	3.87	1.91
6. Present level of competition from other firms:		
very low -- very high	5.32	1.07
7. Expected future level of competition from other firms:		
decreasing -- increasing	5.32	.80
8. Commercial outlets presently available:		
almost none -- very many	2.28	1.28
9. Anticipated future availability of commercial outlets:		
decreasing -- increasing	3.76	1.54
10. Current relationship with agencies such as NASA or DoD:		
fairly poor -- quite good	4.92	1.02
11. Anticipated future relationship with NASA and/or DoD:		
less involvement than now -- more involvement than now	4.62	1.18

Table 9 (Continued)

Item	$\bar{X}$	s
12. Current sales level: (relative to industry averages)		
relatively low -- relatively high	3.65	1.34
13. Anticipated sales level: (relative to current level)		
decreasing -- increasing	4.48	.87
14. Current profit levels: (relative to industry averages)		
relatively low -- relatively high	3.08	1.44
15. Expected short-term future profit level: (relative to current level)		
decreasing -- increasing	3.78	1.04
16. Expected long-term future profit level: (relative to current level)		
decreasing -- increasing	4.57	.90
17. Potential commercial spin-off from government work:		
low -- high	2.30	1.33
18. Current rate of technological change in your industry:		
low -- high	5.33	.91
19. Expected short-term future rate of technological change:		
accelerating -- decelerating	2.19	.92

* Ratings were on six-point scales, the poles of which were as listed for each item.

> is developed to assign some capital value to a senior design engineer with something like 10 years of direct product line experience. In a real sense he is a much more relevant capital asset than equipment which can be owned, leased, borrowed, or obviated.

Along with sensitivities generated by invidious comparisons of defense industry profits as return on sales and as return on investment,[27] these sentiments may help explain the reluctance we cited earlier among firms we encountered to discuss profit in relation to investment -- even in the abstract.

In any event, we also correlated I-index scores with other derived index scores (see Table 17) and found a moderate, but statistically highly significant inverse correlation between it and the P-index ($r=-.48$, $p<.025$). What this correlation indicates is that the higher is a firm's perceived composite level of investment, the less is its concern for performance goals -- perhaps, we might hazard, it is preoccupied with other matters like protecting itself against risk.

The Present and the Future. Our Policy Questionnaire included 19 rating scales representing a variety of dimensions calculated to give an idea of how our respondents viewed their present circumstances and their anticipations of their futures. The items and the group mean response (with its standard deviation) to each may be found in Table 9. Using these averages and taking the present first we can say the following general things about the organizations we studied:[28]

a) They had some unused plant capacity -- probably more than desirable, but this was quite variable. Unused capacity was weakly related with Sales (Self) (Tau=-.35, X^2=2.97). Not surprisingly, the more a company's sales the less its unused plant capacity; but in this group of firms the relationship was remarkably weak. On the other hand, tendencies for Parent firms with a high percentage of government business to have more unused capacity was rather stronger (Tau=.40, X^2=3.79), as was a similar trend among firms with larger numbers of prime contracts (Tau=.45, X^2=3.60).

b) They were experiencing little under-utilization of staff; no variations related to our predictor variables were observed.

c) Their fixed overhead costs were not perceived to be materially different from industry at large; but there was a clear positive relation between the percentage of government business held and low overhead (G/C mix, Self: Tau=.46, X^2=5.26).

d) As a group, the rigidity of their payroll expenses for technical personnel was indeterminate -- about equally often fixed and variable. Variability by company, however, was marked and clearly related to sales volume; high Sales (Self) was associated with a variable payroll for technical personnel (Tau=-.46, X^2=4.70), and a comparable, but weaker, trend was observed in relation to Parent Sales (Tau=-.35, X^2=2.81).

e) They felt competition from other firms to be intense and this was clearly related with Parent Sales volume. The higher

were sales, the more intense was competition seen to be (Tau=-.43, X^2=4.62).

f) They apparently perceived themselves to be moderately "locked-in" to government contracting because of a relative scarcity of commercial outlets. Some, but not a great deal of variability existed in such perceptions. To some extent variability was associated with the Parent's G/C mix -- the higher the percent of government business, the fewer commercial outlets tended to be perceived (Tau=.35, X^2=2.88). It is at least mildly interesting that this relation was no stronger, for it seems an obvious one. The same is true of Contract Dollar Values, which also only showed a tenuous linkage with perceived availability of commercial outlets (Tau=-.39, X^2=2.96).

g) Relations with agencies such as NASA or DoD they viewed as good, but not glorious. Some tendency existed for firms with higher sales (Self) to regard these relations as good, but the relation was not nearly so pronounced as one might have imagined it would have been given the likelihood, in our sample, that most sales were to the Government (Tau=-.35, X^2=2.85). Some suggestions of relations between perceiving good relations and holding larger numbers of prime contracts could also be found (Tau=.35, X^2=2.25). But here, too, the surprise was that the relations weren't stronger.

h) Their current sales levels, with some variations, were about

average for industry. And high sales were associated with having many prime contracts (Tau=.45, X^2=3.60).

i) Profit levels were seen to be near industry averages, if slightly on the low side and a bit more variable than sales; they were unrelated to any of our predictor variables.

j) Commercial spin-off from government work they regarded as low. Like profit, this perception, too, failed to vary with any of our predictors.

k) Finally, the rate of technological change in their industry, with little variation, they rated as very high. In this instance it was firms with high sales (Self) that perceived rates of technological change to be highest (Tau=-.45, X^2=4.13).

As for the future:

a) They were uncertain about the availability of government work, and a good deal of variability in viewpoint existed about the issue. These expectations showed some relation with the firm's G/C mix (Self). Those with higher percentages of government business were more pessimistic about future prospects (Tau=.35, X^2=3.11). Some suggestive tendencies for more optimistic appraisals could be seen among companies with high sales (Self) (Tau=-.33, X^2=2.59). (Evidently firms are inclined to assess their futures in terms of where they are, which seems reasonable if not imaginative.) Consistent with that idea, companies with lower dollar-value contracts also tended to expect less work in the future (T=.37, X^2=2.57).

b) With little variation they looked for pronounced increases in competition from other firms. This was a general outlook unrelated to any of the predictors.

c) Again, they were uncertain and highly variable in their expectations concerning the prospective availability of commercial markets. And also again there were no distinctive variations of view as a function of the kinds of business circumstances indexed by our predictors.

d) Perhaps because of (c), they looked for a slight increase (whether they like it or not) in their involvements with NASA and/or DoD. However, among firms (Self) with an already high percentage mix of government business a tendency could be found to expect less involvement in the future (Tau=.33, X^2=2.67), a condition reminiscent of those described in our study of advertising patterns.[29] And, as the results of that study would lead one to predict, complementing this trend was an opposite expectation of more involvement on the part of those firms currently having fewer prime contracts (Tau=.37, X^2=2.49).

e) Overall, they were generally optimistic about their sales outlook. (This seemed especially true of firms holding more prime contracts (Tau=.35, X^2=2.25).)

f) They were unsure about their short-term profit prospects. However, the higher was a firm's R&D investment, the more did it expect short-term increases in profits (Tau=-.40, X^2=3.65).

g) Although frankly uncertain about the short-term profit picture, they were quite optimistic about their long-term profitability, which, because of the inherent ambiguity of the "long-run," is easier to be. Sanguine outlooks were especially evident among companies (Parent) with high sales levels (Tau=-.42, X^2=4.11). But this optimism was apparently conditional upon those sales not being government sales. for suggestions existed that firms holding larger numbers of prime contracts expected decreasing long-term profits (Tau=-.39, X^2=2.55). We might note here, too, that apparently profit forecasts are based, for one thing, on sales and for another, in this sample anyway, on R&D investment (see the previous paragraph).

h) Finally, they judged rates of technological change to be likely to accelerate, but not rapidly. Here again our predictors discriminated no differential expectancies.

Inspecting Table 9 prompts some other observations worthy of note. For one thing, one can see that measures of variability are generally smaller when they refer to opinions about the future than when they refer to present conditions. In other words, agreement among companies is greater as regards future prospects than it is regarding current states of affairs. On the one hand this probably reflects a set to think in terms of "common fate" or prospects for the group as a whole coupled with a uniform tendency to look at

Table 10

Pearsonian Intercorrelation Matrix for Status

Items*	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1	--	-081	069	442	185	318	186	255	011	307	072	367	-073	-212	-186	-132	021	214	-115
2		--	082	176	-441	-155	191	-248	077	-108	173	-140	231	069	539	194	134	158	-189
3			--	-059	-274	-560	-367	007	-044	-005	397	168	017	222	149	-161	-164	081	-154
4				--	050	179	035	215	193	209	036	261	165	177	375	575	010	-052	-154
5					--	385	287	-218	-230	531	274	074	-310	364	-177	-072	-443	132	-291
6						--	653	-010	260	-202	-160	-082	-074	060	186	186	-120	292	-139
7							--	-213	-104	084	141	-048	-170	086	187	250	-077	440	-412
8								--	419	-033	-214	143	361	-478	-122	-072	212	-222	280
9									--	-162	-066	251	308	-337	065	017	428	000	165
10										--	357	221	189	308	148	-080	-543	-052	029
11											--	221	101	465	397	-102	257	-472	-472
12												--	450	264	167	-212	-137	211	-184
13													--	-102	474	081	011	021	030
14														--	469	325	-338	029	-259
15															--	576	-003	132	-060
16																--	041	260	-338
17																	--	184	057
18																		--	-492
19																			--

Note: Italicized coefficients statistically significant at p=.05 or less. Columns headed 2,3,4,6,7,8,9,13, n=25; columns headed 10,11,14, n=24; columns headed 5,12,15,16 17, n=23; columns headed 18,19, n=21; individual cells vary between n=19-25. * See Table 9 for item statement.

the future through rose-colored glasses (a tendency toward a species of optimism is detectable, as we have noted and shall note again shortly). On the other hand, current appraisals are more likely descriptive statements of reality, whereas future projections literally are opinions reflecting both the conditioning of expectation by usual business aspirations and the mutually reinforcing sentiments of a business community to the effect that the "system will work out."

Another feature worth mentioning about Table 9 is that it speaks again to the "validity" of the data, or at least to the broadly "typical" nature of our sample of respondents and, therefore, to the generalizability of the results of the survey. The point can be grasped by noticing that each time companies were asked to judge themselves relative to "industry averages" the resulting means were near the midpoints of the scale. In short, they were where one would expect they would be if one were dealing with a reasonably representative group of firms from the reference industry -- some of which would be above and some below average.

With that observation we can go on to more detailed analyses of the several dimensions included in our organization status assessments.

When we intercorrelated the responses to all of the scales described in Table 9 we discovered by simple inspection two interesting clusters of items (cf. Table 10 for the full intercorrelation matrix).

The first revolves about doing business with the government, which we found to be associated with:

1. fixed personnel payroll expenses;
2. fixed overhead;
3. low current profit levels; but
4. increasing short-term (though not long-term) profits.

Thus doing business with the government seems to be looked upon as requiring inflexible burden and low profits; but a note of optimism was present as regards profit expectations.

Turning explicitly to profit, we found in a second cluster of inter-related items that:

1. current profit levels were associated with short-term expectations (but not long-term forecasts, even though the trend was the same);
2. expected short-run profits were associated with expected long-run profits;
3. profits were associated with the availability of commercial outlets and spin-off prospects;
4. expected short-run profits were associated with anticipated sales; and
5. current employment of staff capability was associated with long-term profit expectations.

We take this pattern to mean that firms tend to orient themselves mostly in the short-run and to forecast progressively from

the present to the short-term to the long-term. We further infer that sales tends to be a prime basis for assessing the organization's prospects. (One might call to mind our earlier discussion of correlations between profit expectations and sales.)

If we relax somewhat the stringency of our criteria for association,[30] five other meaningful item-clusters can be formed, which we shall simply inventory quickly.

Cluster I, consisting of Items 3, 6 and 7, suggests an inverse determination of the fixity of overhead costs by the intensity of competition.

Cluster II, consisting of Items 1, 4, 15 and 16, implies a tendency to base profit projections on capability utilization (and hence, by inference, on sales).

Cluster III, consisting of Items 6, 7, 18 and 19, suggests an association between competitiveness within an industry and rates of technological change.

Cluster IV, consisting of items 10, 11, 14 and 15, reinforces the idea of a linkage of NASA/DoD-contractor relations and the profitability of the latter.

Cluster V, consisting of items 11, 18 and 19, indicates a somewhat surprising inverse determination of NASA/Dod contractual involvement by patterns of technological change.

Table 11

Item Intercorrelations and Whole-Part Correlations for C-Index ("Current Status")

Item*	1	3	4	6	8	10	12	14	Total
(1)	--	-.04	*.44*	-.32	.25	.31	*.37*	-.21	*.58*
(3)		--	.16	*-.52*	-.13	-.10	-.23	-.09	.01
(4)			--	-.18	.22	.21	.26	.10	*.75*
(6)				--	.10	-.26	.16	.07	-.09
(8)					--	-.08	*.44*	*-.48*	*.39*
(10)						--	.32	.31	*.56*
(12)							--	.26	*.70*
(14)								--	.26

Note: Italicized coefficients statistically significant at p=.05 or less. Columns headed 3,4,6,8, n=25; columns headed 10,14, n=24; column headed 12, n=23; column headed Total, n=22.

* See Table 9 for statement of items.

Table 12

Item Intercorrelations and Whole-Part Correlations For E-Index
("Future Expectations")

Item*	2	7	9	11	13	15	16	17	19	Total
(2)	--	-.19	.08	.17	.23	*.54*	.19	.13	-.19	.30
(7)		--	.10	-.14	.17	-.19	-.25	.08	*.41*	-.10
(9)			--	-.07	.31	.06	.02	*.43*	.16	.27
(11)				--	.10	*.40*	.07	-.10	*-.47*	.02
(13)					--	*.47*	.06	.01	.05	.11
(15)						--	*.58*	-.01	-.06	.24
(16)							--	.04	*-.34*	.22
(17)								--	.06	*.48*
(19)									--	.02

Note: Italicized coefficients statistically significant at p=.05 or less. Columns headed 7,11,13, n=25; column headed 9, n=24; column headed 15,16,17, n=23; column headed 19, n=21; column headed Total, n=19.

* See Table 9 for statement of item.

Table 13

Item Intercorrelations and Whole-Part Correlations For M-Index
("Market Prospects")

Item*	2	7	9	17	Total
(2)	--	.19	.23	-.19	*.53*
(7**)		--	-.10	*-.41*	*.39*
(9)			--	.16	*.60*
(17)				--	*.70*

Note: Italicized coefficients statistically significant at p=.05 or less. Columns headed 7,9, Total, n=25; column headed 17, n=21.

* See Table 9 for statement of item

** Keying of this item reversed from E-Index.

Table 14

Item Intercorrelations and Whole-Part Correlations For H-Index
("Financial Health")

Item*	13	15	16	Total
13	--	*.47*	.08	.32
15		--	*.58*	*.91*
16			--	*.73*

Note: Italicized coefficients statistically significant at p=.05 or less (n=23)

* See Table 9 for item statement

Table 15

Item Intercorrelations and Whole-Part Correlations For D-Index
("Government Dependency")

Item*	8	9	11	Total
8	--	*.42*	.20	*.77*
9		--	.03	*.75*
11**			--	*.53*

Note: Italicized coefficients significant at $p=.05$ or less.
Column headed 9, n=25; columns headed 11, Total, n=24.

* See Table 9 for item statement

** Item reverse keyed

In addition to the preceeding analyses of individual items, three a priori global indexes were defined (see Tables 11, 12 and 15). The first of these pooled eight items (1, 3, 4, 6, 8, 10, 12, 14) and was labelled a "current status" (C-) index. The second was a nine-item (2, 7, 9, 11, 13, 15, 16, 19) aggregation called a "future expectations" (E-) index. The third was a three-item (8, 9, 11) "government dependence" (D-) index.

As was true of our other a priori indexes, these three proved to be of uncertain scalar purity. Regarding the C-index, item intercorrelations and whole-part correlations indicated that items 3, 6, and 14 contributed little (although they didn't seem to work against the other items too seriously). Omitting Item 3 and changing the keying for Item 6 had only a negligible effect on either the item intercorrelations or the whole-part correlations. Therefore, the index was allowed to stand as originally designed. Warts and all we deemed it adequate to our present purposes. However, one will wish to keep in mind that as assessments of "current status," overhead, competition and profitability do not fit well with the others (and availability of commercial outlets fits only somewhat). It is apparent then that this index is multi-dimensional, possibly reflecting on the one hand "financial status" and on the other "sales."

In the case of the E-index, a substantial number of significant item intercorrelations was observed and only item 17 exhibited even a moderately strong whole-part correlation. Omitting Items

11 and 19 from the index and changing the keying of Item 7 improved this situation somewhat.

By excluding Items 13, 15 and 16 a satisfactory "market prospects" (M-) index could be generated. Scores on this index also are listed in Table 7 and the intercorrelations in Table 13. A maximum score on the M-index would be 24; scores between 12 and 16 define the "uncertain" range. The overall mean of 14.84 (s=2.43), therefore, indicates a pattern of uncertainty among our respondents as to their market prospects.

We then combined Items 13, 15 and 16 into another "general financial health" (H-) index with the properties described by the intercorrelations in Table 14. A score of 18 was maximal for this index, the uncertainty range being between 9 and 12. The group mean of 12.16 (s=3.00) suggests a very slight tendency toward optimism on the part of our sample of respondents, but uncertainty would still not be far from the mark as a characterization.

The D-index was relatively clear. All three items gave evidence of contribution to a total score. Nevertheless, however, one must remain mindful that results from these scales are to be treated as suggestive, not as decisive.

With those prefactory and cautionary notes we may observe, with reference to the data in Table 7, that for the C-index a score of 32 or above would indicate a favorable appraisal of a firm's current status. A score of 24 or below would be unfavorable

and anything between 24 and 32 would be uncertain. In the case of the original E-index, the comparable values are 36 (and above) and 27. Reviewing Table 7 discloses a total of five firms (among those responding) describing their current status as "good" and two describing it as "poor;" the rest fall in the "uncertain" (or perhaps "so-so")category. Still more noteworthy is the fact that only two firms described their future prospects as "good" whereas four described them as "poor," the remainder again being uncertain. (The C- and E-index averages point-up the respondents' general uncertainty about their status.) Thus, of the firms in our sample for which scores were obtainable, no more than 15% described their present business situation as clearly favorable. And not even 15% saw their futures in unambiguously favorable terms.

Interestingly, however, there was no substantial correlation between the ways companies evaluated their present condition and their future expectations (C-index x E-index, r=.28). Moreover, scanning the M-index scores shows that eight firms judged their market prospects as "good" and only two as "poor" (the majority, 13, however, remained uncertain). In the case of the H-index, on the other hand, 13 firms appraised their financial health as "good," none described it as "poor," but a substantial minority of 10 still viewed it as "on-the-fence."

Thus underscored is a general atmosphere of uncertainty among

the surveyed companies, but with the added note that organizations plainly differentiate their judgements of their prospects. That is, the firm that says its market prospects are poor or uncertain, need not view its basic financial health in the same terms. This point is expressed in the absence of any correlation between the M- and H-indexes (r=.16). (We might note, too, that the M- and H-indexes correlated, r=.06 and .15 respectively, with the C-index).

The lack of substantial correlation between the C- and E-indexes, therefore, need not be seen to contradict our earlier observations about the dependence of future projections on present conditions. For one thing the heterogeneity of the E-index would tend to attenuate any correlations. For another, the combination of current uncertainty and tendencies to differentiate evaluations of organizational status would also introduce variability into relations between such gross measures as our overall indexes. Finally, we shall see that there is reason to believe that firms, in appraising their status, tend, as it were, to give themselves the benefit of the doubt, thereby artificially reducing inter-organizational variability and further attenuating estimates of correlation.

Turning to the D-index, scores of "12" and over indicate "strong" government-market dependence; scores of "9" and below indicate "low" dependence, and scores between 9 and 12 can be taken to denote "moderate" dependence. The average scores for the group on this index, therefore, indicate low-to-moderate dependence.

Table 16

Display of Firms Above, At or Below the Group Median on Each Index

Firm	Index F	P	R	I	C	E	D	M	H
28	L	M	M	L	M	L	H	M	L
10	L	L	M	H	H	_	M	_	_
30	L	L	H	H	H	H	M	H	H
39	L	L	L	_	H	H	H	H	M
26	L	H	H	L	M	L	H	L	L
36	L	M	M	H	H	H	H	L	M
15	L	L	L	_	_	_	_	H	H
17	L	H	L	L	H	H	H	H	H
20	L	L	H	L	L	H	H	H	H
31	L	M	M	L	L	L	L	M	M
41	L	L	M	M	M	L	L	H	L
7	L	H	M	_	M	H	M	H	L
11	M	M	M	L	L	L	H	L	L
18	M	M	M	_	H	H	L	H	H
24	M	H	H	_	H	H	M	L	L
29	M	M	M	H	_	L	L	M	L
33	M	L	L	H	L	L	M	L	L
34	M	H	M	L	H	L	L	L	H
35	M	H	M	M	_	_	M	_	_
40	M	L	M	M	M	H	L	H	M
42	M	L	M	M	L	H	L	H	M
43	H	H	M	M	L	L	L	L	H
6	H	M	H	L	L	H	H	H	L
32	H	H	H	M	L	L	L	M	H
38	H	H	H	L	H	L	L	L	L

Note: L = below group median; M = group median; H = above group median

Only three companies described their dependence as high; five described it as moderate and 16 as low. In view of the organizations represented in our sample, it would seem that these figures understated the real dependence present. What seems plain is that the obtained scores refer to company-wide conditions and not solely to those of the responding unit. And, too, some whistling in the dark may be involved.

The D-index also shows little tendency to correlate with any of the other indexes derived from the status assessment ratings. Its correlation with the C, E and H-indexes was .24, .22 and -.09 respectively. It did exhibit a weak positive relation with the M-index, suggesting some tendency for firms with high government dependency to look to (hope for?) improving market prospects.

After these segmental analyses it will be useful to look at the data in Table 7 as a whole. To facilitate that, Table 16 was prepared by classifying each company for which data were available as to whether it fell at, above or below the group median on a given index and then entering the corresponding code letters, M, H, or L, in the appropriate table cell. Scanning the resulting display prompts again the observation with regard to the "motivational" indexes, F, P and R, that these tend to go up and down together. Firms tend to be high on all or low on all. In other words, the trend seems to be for goals to become engaged generally (the correlations among these three scales, it will be recalled, actually averaged .38).

Table 17

Intercorrelations of Indexes

Index	F	P	R	I	C	E	D	M	H
F	--	*.45*	.29	-.13	*-.49*	-.13	*-.52*	*-.58*	-.04
P		--	*.39*	*-.48*	-.04	-.25	-.05	*-.68*	.03
R			--	-.24	-.15	-.15	-.14	-.26	-.04
I				--	.24	.19	-.24	.07	-.22
C					--	.28	.24	.06	15
E						--	.22	--	--
D							--	*.39*	-.09
M								--	.16
H									--

Note: Italicized coefficients significant at p=.05 or less. Columns headed P, R, M, H, n=25; column headed D, n=24; columns headed C, E, n=22; column headed I, n=20.

Moreover, those with high motivation scores tend to be firms with unfavorable status assessments. Those with low scores[31] tend to see themselves in at least moderately favorable condition; but, if they do look upon their circumstances as poor, they tend also to describe themselves as low in investment (may we infer, as having little to lose). Even the apparent exceptions to this rule (e.g., company 41) will be seen to fall in the upper range of the "low" goal or motivation group.

The intercorrelations among all the indexes derived here are shown in Table 17. Expressive of the tendency toward an inverse relation between "motivation" and "status" is the average of the correlations of each of the F, P and R indexes with each of the C, E, D, M and H indexes, which is a value of r=-.24. Omitting the H-index this increases to -.29. Inspecting Table 17 it is evident that especially strong negative relations prevail between current status, degree of government dependency and perceived market prospects on the one side and concern with both financial and performance goals on the other.

The Arousal of Organizational Goal-Seeking. It is tempting to infer from all this a form of "activation" effect instigated by organizational threat. Operationally this activation would then be manifest in a generalized mobilization of system resources and an across-the-board intensification of organizational goal-seeking. In short, at least at organizational levels, firms appear to react to their circumstances by a general managerial "relaxation" or "arousal,"

depending, of course, on whether those circumstances are perceived to be "good" or "bad" respectively.

It need not follow from this thesis that engaging one motive must necessarily result in the engagement of all. We need posit only a considerable spill-over that would make exceedingly unlikely the singular engagement of goals. Our thesis, in other words, rests on the premise that activation of a goal amounts to the activation of a much larger system that includes among its aspects other interdependent goals. Switching on such a system sets loose a continuing, dynamic, only partially predictable process involving an interplay of interests, with new ones entering and old ones changing. To open the motivational gate is to loose the flood and it would be foolhardy in the extreme to assume before the fact an ability to anticipate the courses down which it will run. In its face, only a rapid retreat to high ground or else a program of adaptive management could be regarded sensible.

We must emphasize, too, that our thesis should not occasion an inference that all organizations will respond to arousal in the same way. Like its outcomes, the form of response will be hard to forecast. It will depend on a plethora of factors: the starting point of the system, the size of the organization, its structure, managerial competence, market environments, and heaven knows what else.

Furthermore, in this hypothesis we would stress the role of managerial <u>perception</u> and belief, arguing that while these may be

Table 18

Mean Scores on Each Index of Firms Above and Below 1969 Fortune Magazine Figures on Growth, Return on Investment and Return on Sales

Fortune Index	Item F	P	R	I	C	E	D	M	H
Growth									
H*	15.14	10.42	7.00	9.67	29.00	30.83	8.00	15.33	13.17
L	16.28	12.00	7.43	9.00	29.33	29.00	9.14	14.00	12.00
ROI									
H	14.89	10.89	6.78	9.75	28.86	30.43	8.56	15.14	12.86
L	17.20	11.80	8.00	9.40	29.60	29.80	8.60	15.00	12.20
ROS									
H	16.80	11.60	6.80	9.20	27.50	30.60	7.20	15.40	13.20
L	15.11	11.00	7.44	9.38	30.00	29.86	9.33	14.86	12.14

* H = above median; L = below median

constrained by reality, they need not correspond closely to it. Some managements may characteristically hold portentous views of their condition and chronically 'run scared;" others, like the proverbial donkey, may need some help to have their attention got.

Other Status Indicators. Finally, in order to explore these matters further and also to gather data useful to the validation of our indexes, we classified each of the firms in our sample listed among the "Fortune 500" as to whether it was above or below the industry medians on "return on sales," "return on investment," and Fortune's "growth rate index."[38] We then computed the mean scores for each group of firms on each of our derived indexes with the results displayed in Table 18. First of all it will be noticed that, although the differences are not great, there is a consistent tendency for firms falling above or below the median on Growth (defined in terms of earnings-per-share of common stock) and ROI to exhibit uniform differences in their mean scores on our indexes. This trend is not so clear when firms are divided at the industry median return on sales.

Now, for one thing, this speaks to the validity of our derived a priori indexes. Unrefined as they may be as scales, they are evidently capable of differentiating among companies -- on the average at least -- along organizationally meaningful dimensions. In the second place, it will be seen that firms high on ROI and on Growth

(which is related to ROI) consistently score lower on the F, P and R-indexes (the "motivation" pointers). Averaging across the three indexes, the mean scores for companies above and below the growth median were 10.85 and 11.90 respectively -- a difference of more than a full index point; those above and below the ROI median averaged 10.85 and 12.33 respectively -- an even greater spread.

Return on sales, however, produced an opposite pattern on two of the three indexes. The R-index difference was in the same direction as before, but firms with high return on sales scored higher on the F and P indexes and, averaging across all three indexes, the companies above the median return on sales had mean scores of 11.73 and those below it a mean of 11.18.

It may be inferred from these findings that return on sales and return on investment have somewhat different associations with organizational motivation. Unfortunately the size of our sample would not support the kinds of controlled cross-classifications that would be necessary to searching analysis of the matter, so we are unable to say much more about it. We would note, however, that since the questionnaire was a corporate response, it is possible that it reflects something of a financial bias, making such factors somewhat more sensitive indicators.[33]

Be that as it may, looking further at Table 18, another instance of the "whistling in the dark syndrome" can be seen: firms below the median on growth, ROI and return on sales, regularly

describe their "current status" as better than do those above those medians -- and substantially so in the case of sales. More generally, however, the validity of the "status" indexes is supported by the fact that on the E, M and H-indexes, firms above the medians describe themselves more favorably (especially on the H-index).

Further, it will be noticed that, in general, groups of firms that, on the average, score lower on the motivation indexes, score higher on the status indexes, thus confirming the inverse relations described earlier from the index inter-correlations.

Also of interest, as a concluding observation, is the fact that, on the average, those firms classed below the medians on return on sales, return on investment, and growth (particularly the first and last of these) all have high government dependency indexes.

Summary and Conclusions

What finally can we say in summary of the many, often complex things we have seen during this wide-ranging empirical excursion through portions of the Federal procurement and related industrial worlds. At the risk of some oversimplification and keeping in mind that each statement is, for the present, more hypothesis than fact, we may hazard a number of generalizations. To wit:

Many of the firms surveyed segregated their commercial from their government business. Whether they did so or not, however, had to do with their size and the extent of their involvement in R&D work. This finding illustrates a much more general tendency

for the things that organizations do and the ways they do them to vary as a function of both size and technology.

The same phenomenon -- separation of government from commercial operations -- also illustrated a tendency for firms heavily involved in government contracting to differ in important ways from others less heavily engaged. By the same token, those companies serving mainly as prime contractors commonly contrast with their subcontracting counterparts (although this seems to depend heavily on the dollar-values of the contracts involved).

Most of the firms we surveyed were disposed toward reducing their dependence on the government (i.e., DoD/NASA) market, usually by the mechanism of increasing the proportions of their commercial sales. There was, however, no great optimism about prospects for achieving such a re-distribution of sales, and especially not among those corporations already heavily committed to the government market. In any case, one would have to infer some current lack of inherent attractiveness about the government market. It is widely perceived to be burdensome, uncertain and unprofitable, as well, apparently, as necessitating a strong dose of organizational specialization as a condition of entry.

In this connection, interestingly, we found that the firms studied, although they regarded themselves as having the advantage of lower than average capital investments, nevertheless perceived

their aggregate investment to be greater than average because of very heavy investments in technical personnel. Indeed, one of them sternly criticized conventional accounting definitions of investment for their failure to take such factors into account.

As a group, despite some pollyanna-like manifestations, the companies in our sample evaluated their statuses as "questionable," as well they might have in view of the events of the past year. Still, they were able to differentiate various facets of their conditions with the result that outlooks were not uniformly "sour," even if they typically were guarded.

We have said that firms tended to see government contracting as "unprofitable," at least in the most direct sense of that term. Yet we were unable to discover any clearly defined universal standards of high, low or even "acceptable" profit. We did find, however, that large firms and firms heavily involved in government contracting were likely to think "smaller" in the matter of profit, and we offered some reasons for that. Furthermore, we learned that, by and large, profit tended to be thought of mainly as a means of achieving organizational growth and only secondarily (albeit a close second) as a reward for shareholders.

From a review of the conditions companies sought (or did not seek) to satisfy when contracting, we inferred that on the whole they could be characterized as risk-averse, intent on preserving their bargaining position relative to the government, and strongly oriented

toward quality performance and the preservation of working relations with the customer; they were not so pointedly concerned with costs nor with maximizing profits.

Using similar data we were led to the further judgement that, very broadly speaking, organizational motivation tends to be generalized rather than highly specific and to be aroused by adverse managerial perceptions of organizational prospects. At the same time, it must be said that nearly all the firms surveyed earned rather high scores on our "motivation" indicators.

Reviewing various aspects of the subcontracting practices of the companies in our sample, we found, among other things, a clear trend toward limiting competition. The reasons given for such policies gave rise to suppositions that the same conditions were likely to prevail in awarding prime contracts and that, at least where R&D is involved, there are definite constraints upon the feasibility of competitive procurement. In its turn, this conclusion prompts the idea that real need exists for devising effective alternatives to competition in Federal procurements.

Finally, despite repeated and varied attempts, we were unable to develop persuasive evidence that variations in contract forms materially affected modes of contract or project management or the allocation of organizational resources. Nor could we find much emphasis on targeting incentives at other than managerial levels, and then with but little indication of meaningful subsequent

contract-based managerial performance evaluation and reward. Consequently we were moved to voice reservations about the impact and usefulness of incentive arrangements, except, perhaps, for advisory purposes.

It is our anticipation, of course, that we shall have more to say on these and other subjects in future reports and papers.

Footnotes

1. Writings such as J. K. Galbraith's "How to control the military," Harpers, 1969, 238, 31-49; Sen. William Proxmire's Report from Wasteland, New York: Praeger, 1970; H. L. Nieburg's In the name of science, Chicago: Quadrangle, 1966; together with the growth and evolution of the various Federal procurement regulations and contracting methods; the many procurement conferences, such as the NCMA's recent "Systems Acquisition for the '70's" session in Washington; and, of course, the very existence of the professional cadre of specialized contracts administrators represented by the NCMA, all combine to testify eloquently to the breadth of concern.

2. Supported under NASA Grant NGR 33-015-061, the persons and organizations whose help and cooperation made our studies possible were far too many for mention here. It is mete to say, however, that they included the NCMA. Moreover, without the very special encouragement, stimulation and intellectual nourishment afforded by James E. Cravens it is doubtful that we would ever have got into the woods, much less out again. Project summaries and interim reports are available from the Project Director, Prof. R. G. Hunt, Department of Psychology, State University of New York, Buffalo, N. Y. 14226.

3. See Perry, F. A. Jr. & Hunt, R. G. The development of methodologies for the analysis of contracting and organizational motivation. Technical Report No. 6, (July, 1969), Grant NGR 33-015-061, State University of New York, Buffalo, N. Y.

4. Thanks are due the Technical Services Section of the Survey Research Center, State University of New York at Buffalo and to its Director, Joel Rose, and Jeanette Gibson for their patient and generous assistance in this process as well as in others.

5. Organization size is, of course, widely viewed as one of the most significant determiners of both organizational structure and process -- hence our singling it out for special attention. (cf. discussions in Pugh, D. S., et al, Dimensions of organization structure. Administrative Science Quarterly, 1968, 13, 65-105; and in Lichtman, C. M. & Hunt, R. G., Personality and organization theory. Psychological Bulletin, in press.) George Katona, too, has stressed the differences in the managerial tasks of large vs small firms; see his Psychological analysis of economic behavior, New York: McGraw-Hill, 1963, Ch. 9.

6. For purposes of this paper, we commonly accepted as statistically significant, any finding for which the probability of chance occurence was .10 or less. However, we have chosen to give somewhat greater stress to findings significant at the .05-level or below, and also to treat as "suggestive" any finding significant at between .15 and .10. In statistical terms, then, we have chosen to trade a greater risk of wrongly accepting a false hypothesis for a

lesser risk of wrongly rejecting a true one. For analyses based on one degree of freedom, as all of them were, except as noted later, chi-square values of 2.71, 3.84, 5.02, and 6.63 were significant at .10, .05, .025, and .01 respectively.

7. The statistic Tau, used throughout this report as a measure of association, is due to Kendall. It varies from .00 to 1.00 and may take either positive or negative sign. Its magnitude is an index of the degree of association between two variables. Tau-B indexes the special case of association in symetrical tables -- in the present case, where both variables are dichotomous. Chi-square (X^2), of course, is a conventional measure of independence among two variables that requires no more than nominal measurement. We are here using Tau as an index of the form and direction of relations among variables the statistical significance of which has been determined by X^2.

8. See, Blau, P. A formal theory of differentiation in organizations. American Sociological Review, 1970, 35, 201-219.

9. See, Hunt, R. G. & Hunt, G. W. Some structural features of relations between the Department of Defense, The National Aeronautics and Space Administration, and their principal contractors. Technical Report No. 8 (Nov., 1969), Grant NGR 33-015-061, State University of New York, Buffalo, N. Y.

10. Mostly these ideas were derived from interviews with both government and contractor personnel.

11. See Hunt, R. G. Organization and technology. Technical Report No. 9 (Feb., 1970), Grant NGR 33-015-061, State University of New York, Buffalo, N. Y. (Academy of Management Journal, in press.)

12. See Blau, op cit.

13. Discussion of such barriers to entry into the government market can be found, for instance, in Baldwin, W. L. The structure of the defense market 1955-1964. Durham, N. C.: Duke Univ. Press, 1967, and Stekler, H. O. The structure and performance of the aerospace industry. Berkeley: Univ. of California Press, 1965. A useful discussion can also be found in Meyerson, M. The price of admission into the defense business. Harvard Business Review, 1967, 45, 111-123.

14. For a guide to the literature, see Fong, S. & Hunt, R. G. Incentive contracting: An annotated and classified modern bibliography. Technical Report No. 2 (Feb., 1969) Grant NGR 33-015-061, State University of New York, Buffalo, N. Y. Also, novel, because it deals with subcontracting (albeit mostly non-evaluatively), is Shulman, M. L. The negotiation, award and administration of fixed price incentive subcontracts. Masters Thesis, Union College, Schenectedy, New York, 1970.

15. A consideration of contractor risk aversion in contract negotiation can be found in Seagle, J. P. A method for the study of risk aversion from incentive contract negotiations. Technical Report No. 1 (Oct., 1968), Grant NGR 33-015-061, State University of New York, Buffalo, N. Y. See also, Moore, F. T. Incentive contracts. In S. Enke (Ed.) Defense Management. Englewood Cliffs, N. J.: Prentice-Hall, 1967, Pp. 213-232.

16. Exclusive application of incentive schemes to management is, of course, common practice; see Andrews, R. (Ed.) Managerial compensation. Ann Arbor, Mich.: Foundation for Research on Human Behavior, 1965. See also, Patton, A. Men, money and motivation. New York: McGraw-Hill, 1961.

17. Other reviews of contract incentives can be found inventoried in Fong and Hunt, op cit. Among them, however, the following works stand out: Scherer, F. M. The weapons acquisition process: Economic incentives. Boston: Harvard Univ. Press, 1964; Fisher, I. N. A reappraisal of incentive contracting experience. RAND Memorandum RM-5700-PR. Santa Monica, Cal., RAND Corp., 1968; Jones, T. H. Jr. A study of selected aspects of the use of incentive contracts in United States Air Force procurement management. Unpublished doctoral dissertation, Ohio State University, 1967.

18. Katona, G. op. cit.

19. Discussion of these issues, relative to needs for profit, may be found in Hunt, R. G. An essay on the profit motive. Defense Management Journal, 1969, 5, 6-11.

20. This, it may be noted, is consistent with arguments regarding the role of profit advanced in the paper just cited, i.e., Hunt, R. G. ibid.

21. More extended analysis of these matters can be found in Schein, E. Organizational psychology. Englewood Cliffs, N. J.: Prentice-Hall, 1965, and Lichtman, C. M. & Hunt, R.G. op cit., as well as in our working paper, "Corporate, individual and situational factors in organizational motivation." (R. G. Hunt, F. A. Perry, J. . & I. Rubin), State University of New York, March, 1969.

22. See again, Hunt, R. G. An essay on the profit motive, op cit. and, of course, Galbraith, J. K. The new industrial state. Boston: Houghton Mifflin, 1967.

23. Tau-C is a special application of the Tau statistic to asymetrical tables. In the present instance these all were 3x3 tables. As a result all associated chi-square values are based on two degrees of freedom such that magnitudes of 4.61 and 5.99 are significant at the .10 and .05 levels respectively.

24. An informative review of distinctions between tactical and strategic goals may be found in Anthony, R. N. Planning and control systems. Boston: Harvard Univ. Press, 1965.

25. This will become still clearer in a review of our respondents' projected future NASA/DoD involvements later in this paper.

26. Like others before, this observation is based mainly on our interviews with contractor personnel.

27. The debate on defense industry profits can be appreciated from Miles, M. Defense profits: Are they declining or rising. The New Republic, Aug. 17, 1968, 159, 19-21.

28. "Present" in this context is to be understood as referring to the period during which data were gathered, namely, January through June 1969 -- a period when prospects for the aerospace industry were not so darkly clouded as they are at the time this is written (i.e., June, 1970).

29. Hunt, R. G. & Fong, S. Advertising and organizational motivation: An empirical inquiry. Technical Report No. 5 (May, 1969), Grant NGR 33-015-061, State University of New York, Buffalo, N. Y. By studying comparative advertising patterns for matched groups of mainly government contractors and mainly commercial firms, an "impulse toward diversification" was discerned. The former exhibited a long-term tendency to reduce their advertising in "aerospace" periodicals and to increase it in "general business" outlets; commercial firms showed an opposite, if weaker trend.

30. That is, from the requirement that correlations be statistically significant at least at .05-levels, to one allowing acceptance of relations significant at .10.

31. We should point out that even those firms producing relatively "low" scores were actually rather high in absolute terms. In other words, we were dealing with a group of firms all of which were highly motivated. As a consequence we are trying to make comparative differentiations within a restricted segment of the motivational scales, which very possibly accounts for why we have generated no more statistically significant analyses than we have. In any event, it is another reason for our willingness to work with lower than usual levels of statistical significance.

32. Fortune Magazine. Directory of the 500 largest industrial corporations. Fortune, 1970 (May), 81, 182-203.

33. An interesting treatment of this problem of relations between actual and perceived business conditions and corporate goal-seeking is to be found in Katona, op cit., Pp. 206 ff. As anticipated in our earlier Working Paper (i.e., Hunt, Perry & Rubin, op cit.) our current findings imply a somewhat more generalized motivational engagement by adverse circumstances than he suggests, but they are nonetheless largely consonant with his ideas. Any seeming points of difference will need to remain moot.

Appendix

STATE UNIVERSITY OF NEW YORK AT BUFFALO
Contracting and Motivation Study

Policy Questionnaire

This questionnaire is concerned with your firm's experiences, policies and procedures regarding federal government contracting. It consists of five parts, the last of which, "Comments," invites pertinent observations additional to those previously made. It also provides an opportunity for clarification or amplification of earlier answers.

Full or partial answers to certain questions may be contained in existing brochures, reports or other documents. If so please attach them hereto and indicate appropriate references at suitable points in the questionnaire. If not already matters of public record, all information contained in this questionnaire, or otherwise furnished by the subject organization or its employees, is confidential both as to organization and individual. No public attribution will be made without express written permission.

In the areas it surveys, this questionnaire is intended to constitute a statement of organizational position, as distinct from personal viewpoint. Therefore, care should be exercised to assure that it fully and accurately reflects the views and policies of your organization. (For present purposes, "Division" is defined as a semi-independent operating unit and policy center within a single company and "Subsidiary" is defined as a company having over half its stock owned or controlled by another company.)

Company (Include Division and/or Parent Company, if relevant -- completion of this question is optional) _____

_____

If previous question is unanswered;
Is your organization a division or a subsidiary of a larger firm? (Check one)

_____ Division _____ Subsidiary _____ Neither

Answers herein represent policy of (check which applies):

_____ Company as a whole _____ Division only _____ Subsidiary

Is any major internal corporate reorganization in process or pending? If so, please describe briefly its general nature and rationale. _____

_____

_____

Is merger with another company in process or pending? If so, please describe briefly its circumstances. _____

_____

_____

Title of official supervising completion of this questionnaire: _____

_____

Thank you for your cooperation.

A. ORGANIZATION SURVEY

1. In the past year what was the average number of employees (all types and levels) in your organization? (Check one)

____ 25,000 or more	____ 500 - 1,999
____ 12,000 - 24,999	____ 250 - 499
____ 7,000 - 11,999	____ fewer than 250
____ 2,000 - 6,999	

1a. If your organization is a division of a larger firm, approximately what was the average total number of employees (all types and levels) in your parent firm? (Place an X in the space above that applies).

2. From the most recent full year, what were the total sales by your organization? (Check one)

____ $700 million or more	____ $35 - 74 million
____ $325 - 699 million	____ $10 - 34 million
____ $175 - 324 million	____ $ 1 - 9 million
____ $125 - 174 million	____ less than $1 million
____ $ 75 - 124 million	

2a. If your organization is a division of a larger firm, approximately what were the total sales of your parent firm? (Place an X in the space above that applies).

3. During the most recent full year, and including all sources, what were your organization's total R&D expenditures? (Check one)

____ over $75 million	____ $100,000 - 1 million
____ $15 - 75 million	____ less than $100,000
____ $ 1 - 15 million	

4. During the most recent full year, what was the approximate mix of government and commercial business in your organization (as a percentage of sales)? (Check one)

____ over 80% government	____ 16 - 25% government
____ 51 - 80% government	____ 6 - 15% government
____ 26 - 50% government	____ 5% or less government

4a. If your organization is a division of a larger firm, approximately what was the commercial/government mix in your parent firm? (Place an X in the space above that applies).

5. Where is your organization located (principal operations)?

_____ Northeast _____ Midwest _____ Pacific
_____ Southeast _____ Southwest Coast

6. About how many persons hold stock in your (parent) organization? (Check one)

_____ 0 - 100 _____ 100 - 1000 _____ over 1000

7. Which of the following describe your organization's business? (Check all that apply -- if more than one, encircle that one which normally accounts for the greatest volume of sales)

A. Contract Construction
_____ General Building _____ Heavy Construction _____ Other (describe)
_____

B. Manufacturing
_____ Ordnance and accessories
_____ Textile products (including apparel)
_____ Lumber and wood products
_____ Paper and allied products
_____ Chemicals and allied products
_____ Petroleum and refining and related industries
_____ Rubber and miscellaneous plastic products
_____ Stone, clay, glass and concrete products
_____ Primary metal industry
_____ Primary metal products (except ordnance, machinery and transportation equipment)
_____ Machinery (except electrical but including computing machines)
_____ Machinery (electrical)
_____ Motor vehicles and equipment
_____ Aircraft and parts
_____ Ships
_____ Professional, scientific and controlling instruments, photographic and optical goods, watches and clocks
_____ Other (describe): _____

C. Services
_____ Communication
_____ Engineering and architectural services
_____ Maintenance services
_____ Other (describe): _____

7a. If your organization is a division or a subsidiary of a larger firm please place an X in the space describing additional lines of business in which your present firm is engaged. Then, for all lines indicated, draw a box around that one accounting for your parent firm's largest volume of sales.

B. GENERAL CONTRACTING SURVEY

1. Since 1950 roughly how many contracts has your organization performed, either as prime or subcontractor, for agencies of the federal government and within what range has the dollar value of most of these contracts fallen?

_____ prime and _____ subcontracts

ranging in value from $_____ to $_____

2. In what year was the first such contract received? (If prior to 1950, simply so state.) _____

3. Has the bulk of your organization's experience with federal government contracting been:

_____ Prior to 1962
_____ Since 1962
_____ Without real difference as to time

4. With what federal procurement agencies (e.g., NASA-Goddard, NASA-Houston, AFSC, SAMSO, Navy-OSC, Army Missile Command, AEC, etc.) has your organization most often contracted? (List in order, the 2 or 3 most frequent along with the kinds of work most commonly covered.)

Agency	Work Covered
_____	_____
_____	_____
_____	_____

5. Does your (parent) company separate organizationally or administratively government and commercial work? If so, please describe how. _____

6. For your company as a whole would you say there is presently:

_____ a trend toward more emphasis on government contracting?
_____ a trend toward less emphasis on government contracting?
_____ a generally constant pattern of government contracting?

7. For your company as a whole, approximately what percentage mix of government and commercial business is regarded as optimal?

from about _____% to about _____% government

8. Approximately what percent of R&D work performed under government contract in your organization has resulted, directly or indirectly, in follow-on production work, either in your organization or elsewhere in the firm?

about _____%

9. Has the bulk of your organization's government-sponsored work been performed as:

_____ prime contractor?
_____ sub-contractor?
_____ about equally as prime and sub-contractor?

10. By office or position, who in your company normally exercises final line decision regarding types, terms and other contract features? _____

11. What is the usual composition of your organization's contract negotiation team? By position title, please identify the normal principal negotiator, describe the function of each team member and indicate what variations in composition or function might be associated with variation in the contract's size or nature.

Usual chief negotiator: _____

Usual team members (position title)	Functions
_____	_____
_____	_____
_____	_____
_____	_____

Variations by contract size or nature (describe): _____

12. When letting subcontracts, does your firm tend to rely on a relatively established group of subcontractors with whom you've had long-term relationships involving the kind of work required? If so, please describe briefly the rationale for this policy. If not, please describe briefly any policy that is followed along with its rationale. _____

13. When contracting, and especially for R&D-type work, how important does your management believe it to be that the specific contract:

Protect the contractor against risk (check one)

essential	desirable but not really essential	neither essential nor even desirable

Offer operational flexibility (check one)

essential	desirable but not really essential	neither essential nor even desirable

Foster program discipline (scope, methods, procedures) (check one)

essential	desirable but not really essential	neither essential nor even desirable

Reduce government technical direction or surveillance (check one)

essential	desirable but not really essential	neither essential nor even desirable

Safeguard proprietary interests (check one)

essential	desirable but not really essential	neither essential nor even desirable

Foster quality performance (check one)

essential	desirable but not really essential	neither essential nor even desirable

Engender high degrees of motivation to control costs (check one)

essential	desirable but not really essential	neither essential nor even desirable

Stimulate high levels of contractor/government communication (check one)

essential	desirable but not really essential	neither essential nor even desirable

Yield a high profit level (check one)

essential	desirable but not really essential	neither essential nor even desirable

14. In your organization, are there procedural differences in the administration of incentive contracts relative to other types? Please outline them briefly. _____

15. For R&D, in general are people throughout the firm aware of the particular types of contracts (i.e., incentive, fixed price, etc.) they are working under? What is the lowest level of the organization to which awareness extends and how is it brought about?

Lowest level of awareness: _____

Means of bringing about awareness: _____

Are there differences in the case of production contracts? If so, please describe: _____

16. With special reference to contracts having incentive features, to what extent and in what ways are functional departments in the organization (e.g., engineering, accounting, etc.) informed, directly or indirectly, about the structuring of individual contracts with which they are involved? (For example, are production workers told how much a reduction in cost will increase profits?) _____

17. Do incentive structures affect resource allocation, staff and material priorities and transfers or the like? If so, how? _____

18. Has your organization received or let subcontracts that contain incentives for cost saving, performance, or timely delivery? If so, please describe why they were used, and how often they are used.

How often used: _____
Reasons for use: _____

19. If you have let or received subcontracts with incentives, what kinds of constraints were placed on you or your subcontractor (e.g., cost accounting procedures, inspection on subcontractor's premises, scheduling, etc.)?

19a. How are the type and degree of constraints determined?

19b. How might the constraints described above differ from subcontracts with a firm fixed price?

20. Are there any special policies guiding the kinds (i.e., FFP, CPIF, etc.) of government contracts your organization will seek or accept, or setting conditions relative to bids or proposals for government work? If so, please describe them.

20a. If your organization is a subsidiary, what portion of the guidelines described above are established by the parent? ___ check if not applicable.

20b. If your organization has subsidiaries, what types of guidelines do you (the parent) establish for the subsidiaries? Are they the same for all subsidiaries? ___ check if not applicable.

21. Does your organization employ any form of wage incentive plan (i.e., any system for providing extra monetary payments or other considerations convertible to money -- e.g., stock -- in direct relation to individual, group or company performance)? If so, please describe it briefly and indicate personnel levels to which it is applied.

C. INCOME AND EXPENDITURE SURVEY

In this section of the questionnaire, please answer from the point of view of the corporation or the corporate division, as appropriate, and indicate this orientation in the space below.

The following answers describe and reflect policy at

the corporate level _____

the divisional level _____

1. Approximately, what is the total acquisition value of machinery, buildings, tools, and test equipment (not land) currently used in your activities?

_____

_____

2. What percentage is used for R&D (Research and Development) projects?

_____

_____

2a. What percentage of R&D is under government contract?

_____

_____

3. What percentage of facilities and equipment used for government R&D is government furnished?

_____

_____

4. Which kinds of contracts tend to be associated with larger amounts of government furnished materials? (check the two largest)

_____ production contracts
_____ operations analyses
_____ pilot production
_____ testing
_____ other: (describe) _____

5. What percentage of total revenues, in a typical year, represents fees for research and development contracts with the federal government?

_____

6. What percentage of total revenues, in a typical year, represents fees for research and development contracts with other corporations?

_____

7. What percentage of revenues or profits is typically allocated to "in-house" research and development?

percent revenues _____
percent profits _____

8. With respect only to R&D contracts with the federal government, do larger contracts differ from smaller contracts with respect to government furnished materials (including facilities, machinery and equipment) as a percentage of total contract costs? (check one)

_____ Larger contracts have relatively larger government contributions
_____ Larger contracts have about the same relative government contributions
_____ Larger contracts have relatively small government contributions

9. Of capital equipment and facilities not furnished by government, what percentage, typically, must be procured new by the company/division?

_____ %

10. What part of total contract costs do such new procurements normally represent?

_____

11. What is the useful life of capital equipment procured for R&D work in the company/division?

_____

12. What is the age-distribution of capital equipment (Valued at acquisition cost) used by the company/division? What is the age-distribution of capital equipment used principally for R&D by the company/division? (Check one in each column)

	R&D	Total
Less than 2 years	_____	_____
2 - 4 years	_____	_____
4 - 6 years	_____	_____
6 - 8 years	_____	_____
8 - 10 years	_____	_____
over 10 years	_____	_____

b. Now we'd like you to tell us whether you think things should be different from the way you've just described them. Please fill out the form once again, this time describing what you believe differences between governmental and non-governmental projects <u>should</u> be.

	SHOULD BE MORE LIKELY	SHOULD BE LESS LIKELY	SHOULD BE ABOUT EQUALLY LIKELY
To increase the long-run profitability of the firm?			
To increase and extend the reputation of the firm?			
To be subsequently used on many other projects?			
To increase the skills of employed technicians and workers?			
To result in more precise or higher quality products?			
To be disposed of by reselling to another firm?			
To be leased rather than purchased from the supplier?			

13. What is the disposition of capital equipment used in R&D work? (check most typical)

_____ Returned to lender
_____ Retained and purchased
_____ Retained on loan
_____ Scrapped
_____ Sold to third party

14. Who (by function, office, or position) in your organization makes decisions concerning capital budgeting? _____

_____

_____

15. Please complete the following check lists:

a. When compared with non-governmental projects, are investments by your organization in capital equipment for fulfilling government contracts more likely, less likely or about equally likely. (Check the appropriate box alongside each statement.)

	MORE LIKELY	LESS LIKELY	ABOUT EQUALLY LIKELY
To increase the long-run profitability of the firm?			
To increase and extend the reputation of the firm?			
To be subsequently used on many other projects?			
To increase the skills of employed technicians & workers?			
To result in more precise or higher quality products?			
To be disposed of by reselling to another firm?			
To be leased rather than purchased from the supplier?			

(over)

16. For what uses does your company require profit? Please rank each of the following functions in terms of their importance to your particular company. Use 1 to indicate "most important," 2 to indicate "next most important," etc.

_____ meet current capital requirements
_____ enlarge capital base (growth)
_____ pay stockholders and attract capital
_____ measure overall performance effectiveness
_____ finance internal R&D
_____ other (describe): _____

16a. Relative to firms in other industries having annual sales comparable with yours, would you say your firm's level of capital investment is:

probably lower	about the same	probably higher

16b. Relative to firms in other industries having annual sales comparable with yours, would you say your firm's investment in technical/ engineering personnel is:

probably lower	about the same	probably higher

17. In general, what would you say a reasonable "going out" profit would be for your company on an R&D contract?

_____ % of sales
_____ % of investment

18. Understanding that a number of factors might influence the acceptability of a given level of profit, what percentages define the limits of the range between what you would regard as rather a low fee for R&D work and a high one?

LOW: anything below ____% of sales HIGH: anything above ____% of sales
LOW: anything below ____% of investment HIGH: anything above ____% of investmen

D. ORGANIZATION STATUS ASSESSMENT

For each of the following, check the space that best describes your organization.

1. Physical plant capability currently employed (relative to normal operations):

50% or less :--1--:--2--:--3--:--4--:--5--:--6--: near total

2. Future expectations concerning availability to your industry of government business:

less work :--1--:--2--:--3--:--4--:--5--:--6--: more work

3. Fixed overhead costs: (relative to industry averages)

relatively low :--1--:--2--:--3--:--4--:--5--:--6--: relatively high

4. Staff capability currently employed:

significant under-utilization :--1--:--2--:--3--:--4--:--5--:--6--: near total utilization

5. Payroll expenses pertaining to technical personnel:

fixed :--1--:--2--:--3--:--4--:--5--:--6--: variable

6. Present level of competition from other firms:

very low :--1--:--2--:--3--:--4--:--5--:--6--: very high

7. Expected future level of competition from other firms:

decreasing :--1--:--2--:--3--:--4--:--5--:--6--: increasing

8. Commercial outlets presently available:

almost none :--1--:--2--:--3--:--4--:--5--:--6--: very many

9. Anticipated future availability of commercial outlets:

decreasing :--1--:--2--:--3--:--4--:--5--:--6--: increasing

10. Current relationship with agencies such as NASA or DoD:

fairly poor :--1--:--2--:--3--:--4--:--5--:--6--: quite good

11. Anticipated future relationship with NASA and/or DoD:

less involvement than now :--1--:--2--:--3--:--4--:--5--:--6--: more involvement than now

(over)

12. Current sales level: (relative to industry averages)

relatively low :--1--:--2--:--3--:--4--:--5--:--6--: relatively high

13. Anticipated sales level: (relative to current level)

decreasing :--1--:--2--:--3--:--4--:--5--:--6--: increasing

14. Current profit levels: (relative to industry averages)

relatively low :--1--:--2--:--3--:--4--:--5--:--6--: relatively high

15. Expected short-term future profit level: (relative to current level)

decreasing :--1--:--2--:--3--:--4--:--5--:--6--: increasing

16. Expected long-term future profit level: (relative to current level)

decreasing :--1--:--2--:--3--:--4--:--5--:--6--: increasing

17. Potential commercial spin-off from government work:

low :--1--:--2--:--3--:--4--:--5--:--6--: high

18. Current rate of technological change in your industry:

low :--1--:--2--:--3--:--4--:--5--:--6--: high

19. Expected short-term future rate of technological change:

accelerating :--1--:--2--:--3--:--4--:--5--:--6--: decelerating

E. GENERAL COMMENTS

Please enter here any comments you believe pertinent either to matters raised in this questionnaire or any others you believe to be relevant to our investigation:

POLICY QUESTIONNAIRE

Final Code

(Summary)

Use general codes:

O for omitted from questionnaire supplied
X for unanswered
Y for inapplicable

I. Contractor Experience (B)*

Item**	Code
9 (Prime or Sub)	: 1 - Prime; 2 - Sub; 3 - Equal
1a (No. Prime)	: 1 - 1000 or fewer; 2 - over 1000
1b (No. Sub)	: 1 - 500 or fewer; 2 - over 500
1c (Contract Values)	: 1 - none above 10 million
	2 - none above 100 million
	3 - above 100 million
2 (Cont. how long)	: 1 - pre-1950; 2 - 1951-'56; 3 - 1957 or later
3 (Pre/Post McNamara)	: 1 - 1962 or earlier; 2 - since 1962
4a (Agencies)	: 1 - DoD, USAF
	2 - DoD, USN
MULTIPLE	3 - DoD, USA
CODING	4 - DoD, other or unspecified
PERMISSIBLE	5 - NASA, Marshall (Huntsville)
	6 - NASA, Houston
	7 - NASA, other or unspecified
	8 - Other (specify): _____

N.B. For purposes of subsequent analysis most codes were reduced to simple dichotomies by combining adjacent categories.

* Heading refers to Section from Policy Questionnaire.

** Refers to items within Questionnaire Sections.

Policy Questionnaire - Final Code

II. Contractor Organization (B)

Item	Code
5 (Comm/Govt. Separation)	: 1 - No; 2 - at least partial separation
11a (Chief Negotiator)	: 1 - Contracts, marketing or business mgmt 2 - Program, Project, or technical mgmt 3 - Other: _____
11b (Negotiation Team)	
Does the negotiation team include	
a. Financial Personnel	: 1 - Yes; 2 - No or doesn't say
b. Pricing &/or Estimating Specialists	: 1 - Yes; 2 - No or doesn't say
c. Technical Specialists	: 1 - Yes; 2 - No or doesn't say
d. Contracts Personnel (if not chief negotiator)	: 1 - Yes; 2 - No or doesn't say
e. Program/Project Manager (if not chief negotiator)	: 1 - Yes; 2 - No or doesn't say
f. Legal	: 1 - Yes; 2 - No or doesn't say
g. Other (specify)	: 1 - Yes; 2 - No or doesn't say
14 (Contract Administration: Incentives)	: 1 - NO 2 - Yes, closer monitoring and control re incentive formulas or opportunities
15a (Level of Awareness)	: 1 - no lower than working-level supervisio 2 - full working level awareness
15b (Means of Inducing Awareness) As means of inducing awareness does R mention	
a. Detailed briefings &/or reviews whether written, oral or both	: 1 - Yes; 2 - No or doesn't mention
b. Contract-based program planning budgeting, etc.	: 1 - Yes; 2 - No or doesn't say
c. Unformalized supervisory/managerial communication (including distribution of memos, newsletters, etc.)	: 1 - Yes; 2 - No or doesn't say

Policy Questionnaire - Final Code

15c (Differences between R&D vs Production)

Are there differences in the level and extent of awareness between R&D vs Production contracts : 1 - No; 2 - Yes

16a (Awareness of Incentives) : 1 - Incentive structure described in general or selectively

: 2 - Incentive structure described in detail

: 3 - Project monitored re incentive structure, with periodic review meetings

: 4 - No attempt to make contract form known

16b (Generality of Awareness) : 1 - Awareness is intended to extend generally or without specific restriction

: 2 - Awareness is induced on some selective basis

: 3 - Doesn't say or varies

: 4 - Inapplicable (code here if 16a is coded 4

17 (Incentives affect Resource Allocation) : 1 - No, minimally; 2 - Yes

18a (Use of incentives, subcontracting) : 1 - No; 2 - Yes, Frequently; 3 - Yes, Infrequ

18b (Rationale) : 1 - To induce generalized motivation, or operational discipline -- to insure work receives attention of mgmt -- (Include concerns with all aspects of performance)

: 2 - Induce motivation, emphasis on performance quality and/or delivery

: 3 - Distribute risk more equitably

: 4 - Other (specify): _____

19a (Constraints imposed)
Are any of these constraints imposed

a. Few or no constraints are imposed: If code yes, code all others Y, inapplicable) : 1 - Yes; 2 - No, constraints are imposed

b. Require access to plant & pre-delivery inspection rights : 1 - Yes; 2 - No, or doesn't say

c. Approval & monitoring of work plans, operating procedures, performance, etc. : 1 - Yes; 2 - No or doesn't say

d. Reports & access to records re costs (especially labor & material) : 1 - Yes; 2 - No or doesn't say

e. G. & A., burden, etc. ceilings imposed : 1 - Yes; 2 - No or doesn't say

f. Other (specify): _____ : 1 - Yes; 2 - No or doesn't say

19b (Rationale for Constraints)
As a rationale for imposing constraints, does R mention

a. Terms of prime contract : 1 - Yes; 2 - No or doesn't say

b. Prime's analysis of critical needs in addition to or separately from terms of prime contract : 1 - Yes; 2 - No or doesn't say

c. Supplier's past record : 1 - Yes; 2 - No or doesn't mention

d. Negotiation or mutual agreement : 1 - Yes; 2 - No or doesn't say

e. Other (specify): _____ : 1 - Yes; 2 - No or doesn't say

19c (Differences re FFP) : 1 - Constraints largely eliminated

2 - Constraints reduced, but not eliminated

3 - Other (specify): _____

20 (Standard list of subs) : 1 - No
12

2 - Varies with item or service (emphasis is on competition for off-the-shelf items, otherwise best source) or give important weight to past performance in source selection.

3 - Yes (at least for followon work within a program or so long as remain competitive)

4 - Other

Policy Questionnaire - Final Code

Section 3. Attitudes, Perceptions, Motives re Government Contracting (B)

Item	Code
6 (Trends in emphasis)	: 1 - More; 2 - Less; 3 - No change
7 (Optimal mix - Govt./Comm.)	: 1 - 75 or more a. (use highest figure cited) 2 - 50-74 3 - 25-49 4 - under 25% b. (code second time using lowest figure cited)
13 (Contracting Goals)	: 6 - Essential 5 - Desirable 1 - Neither -- (Code omissions as "1")

Scale each of 9 items

13a (Financial Goals)	: $\leq$ (a, e, g, i)
13b (Performance Goals)	: $\leq$ (b, c, f)
13c (Relationship Goals)	: $\leq$ (d, h -- reverse scoring for d)
20 (special policies re contracts) (20a and 20b are omitted)	: 1 - No; 2 - Yes
8 (Instrumental value of R&D)	: 1 Less than ½; 2 - More than ½

Section 4 - Wage Incentives (B)

21a (Recipients)	: 1 - no plan 2 - only mgmt 3 - all levels 4 - others
21b (Criterion of award)	: 1 - awards do not relate to individual effort 2 - awards do relate to individual effort (whether or not also relate to group effort 3 - Other: _____ Y - Not applicable (code here if 21a coded "1")

Policy Questionnaire - Final Code

Section 5. Income and Expenditures (C) (Items 1 - 15 omit)

Item	Code
16 (Functions of Profit)	: For each assign rank as score
17 (Going out Profit)	
Sales	: 1 - 3-5%
	2 - 6-8%
	3 - 9% or more
ROI	: 1 - 15 or less
	2 - over 15%
18 (Low Profit Boundary)	
Sales ROI	: Record figure cited by respondent
(High profit boundary)	
Sales ROI	: Record figure cited by respondent

Section 6. Organization Features

Item	Code
A1 (Employees)	: 1 - 12,000 or more
self	: 2 - 2,000 - 11,999
parent	: 3 - fewer than 2,000
A2 (Sales)	: 1 - 325 million or more
self	: 2 - 75-324 million
parent	: 3 - less than 75 million dollars
A3 (R&D)	: 1 - Over 75 million
	2 - 15-75 million
	3 - 1-15 million
	4 - less than 1 million dollar

Policy Questionnaire - Final Code

A4 (Govt/comm mix)	: 1 - 80% or more govt.
self	2 - less than 80% govt.
A4 (Govt/comm mix)	: 1 - over 80% govt.
parent	2 - 51-80% govt.
	3 - 26-50% govt.
	4 - less than 25% govt.
A5 (Location)	omit
A6 (Stockholders)	: 1 - 0-1000
	2 - over 1000
A7 (Business)	: 1 - Aerospace and Electronics
	2 - Other manufacturing
	3 - Technical, engineering, support services, and other
C16a (Investment level: Capital)	: 1 - lower
	3 - same
	5 - higher
C16b (Investment level: Personnel)	: 1 - lower
	3 - same
	6 - higher
C16c (Investment level: Total)	: $\leq$ (16a, 16b)

Section 7

Item	Code
1-19 (Individual items)	: Score each 1-6 (as per scale)
a. Current Status	: $\leq$ (1,3,4,6,8,10,12,14)Reverse scale, items
b. Future	: $\leq$ (2,7,9,11,13,15,16,17,19)Rev.scale, item
c. Govt. Dependence	: $\leq$ (8,9,11) Reverse scale, item 11
d. Market Prospects	: $\leq$ (2,7,9,17)
e. Gen. Finan. Health	: $\leq$ (13,15,16)

END

DATE

FILMED

MAY 18 1971