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REPORT ON THE DEPARTMENT OF DEFENSE FUZE INDUSTRY WORKSHOP

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A three-day workshop was held March 1990 to explore problems endemic to the Safing, Arming, and Fuzing (SAF) industry. This paper presents the activities, findings, and proposed solutions generated during the workshop. The purpose of this report is to provide the necessary documentation for thorough interpretation of the results by industry and government SAF device experts. The participants identified 58 inhibitors to effective acquisition of SAF devices. The influence relationships among 39 of the more important inhibitors were explored by the participants and an influence structure was created. Fifty-nine initiatives for ameliorating the inhibitors of effective SAF device acquisition were generated by the participants. Thirteen of these initiatives were superimposed on the influence structure of inhibitors.

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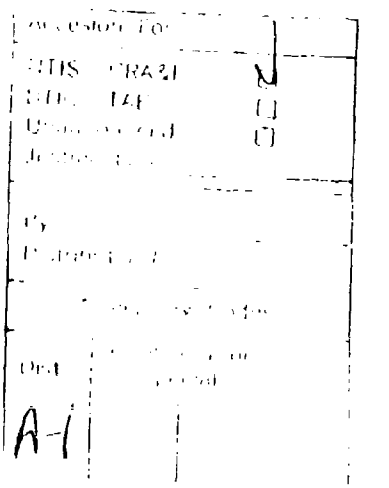

INSTITUTE FOR DEFENSE ANALYSES
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PREFACE

This paper is the result of work performed by the Institute for Defense Analyses (IDA) under contract number MDA 903 89 C 0003, task order T-F6-788, "Problems Endemic to the Fuze Industry." This work was performed for the Office of the Under Secretary of Defense for Acquisition, Deputy Director Defense Research and Engineering, Tactical Warfare Programs, Office of Munitions.

This paper was reviewed by Dr. W. Scott Payne of IDA.

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ACRONYMS

AAWP	Air Armament Working Party
ADPA	American Defense Preparedness Association
AFATZ	Air Force Armament Laboratory
AFSC	Air Force Systems Command
AMCCOM	Armament Munitions, and Chemical Command
ARDEC	Armament Research, Development, and Engir ..ing Center
ARMARC	Army Materiel Acquisition Review Committee
BAFO	Best and Final Offer
BTP	Build-to-Print
CICA	Competition in Contracting Act
DCAS	Defense Contract Administration Service
DCASR	Defense Contract Administration Service, Regional
DMR	Defense Management Review
DoD	Department of Defense
ECP	Engineering Change Proposal
ECM	Electronic Countermeasures
FAR	Federal Acquisition Regulation
FAT	First Article Test
FESWG	Fuze Engineering Standardization Working Group
GE	General Electric Company
HDL	Harry Diamond Laboratory
HQ	Headquarters
IPF	In Process Facilitization
IR&D	Internal Research and Development
ISM	Interpretive Structural Modeling
LAT	Lot Acceptance Test
LRIP	Low Rate Initial Production

MIL-STD	Military Standard
NATO	North Atlantic Treaty Organization
NC	Numerical Control
NDI	Non-developmental Item
NGT	Nominal Group Technique
OEM	Original Equipment Manufacturer
PAC	Political Action Committee
PM	Program Manager
POC	Point-of-Contact
R&D	Research and Development
RDT&E	Research, Development, Test, and Evaluation
ROI	Return On Investment
SAF	Safing, Arming, and Fuzing
SPC	Statistical Process Control
TCO	Technical Contracting Officer
TDP	Technical Data Package
TQM	Total Quality Management
UHF	Ultra-high Frequency
US	United States
USAF	United States Air Force
VHF	Very high Frequency

EXECUTIVE SUMMARY

The Safing, Arming, and Fuzing (SAF) industry has been in sharp decline in the past decade. The perceptions that SAF devices employ mature technology, are easy to build, and are inexpensive has resulted in continual underfunding of research, development, testing, and evaluation by both industry and government. This fact, combined with a lack of production requirements, has resulted in an erosion of the SAF industrial base. Today, the number of companies capable of producing quality SAF devices is decreasing.

In February 1990, the Office of the Under Secretary of Defense for Acquisition, Deputy Director Defense Research and Engineering, Tactical Warfare Programs, Office of Munitions, tasked the Institute for Defense Analyses (IDA) to explore problems endemic to the fuze industry and, once identified, formulate a corrective action plan. IDA worked in conjunction with the sponsor and the Defense Systems Management College (DSMC) to design a workshop for technical managers with relevant knowledge and expertise in the fuze industry. The sponsor selected the workshop participants, who, as a whole, represent almost three hundred years experience with SAF devices. The objectives for the workshop, established and agreed to prior to the workshop, were

1. To identify critical factors that inhibit DoD's ability to effectively acquire SAF devices.
2. To organize those factors into a structural representation that depicts how the factors influence each other.
3. To develop initiatives that, if implemented, will improve acquisition of SAF devices.
4. To superimpose the initiatives on the structural representation of the inhibiting factors, to show their relative saliency and effectiveness.

The workshop was held March 7-9, 1990, at the Radisson Mark Plaza Hotel in Alexandria, Virginia. During the workshop, the project team from DSMC and IDA led the participants through a structured problem solving methodology and recorded the results of the group deliberations. This report presents the activities, findings, and proposed

solutions generated during the workshop. Only minimal interpretation of the results was performed by the editors. The purpose of this report is to provide the necessary documentation for thorough interpretation of the results by industry and government SAF device experts.

The participants identified 58 inhibitors to effective acquisition of SAF devices. The influence relationships among 39 of the more important inhibitors were explored by the participants. The influence structure resulting from this activity appears in Figure II-2. Fifty-nine initiatives for ameliorating the inhibitors of effective SAF device acquisition were generated by the participants. Thirteen of these initiatives were superimposed on the influence structure of inhibitors as shown in Figure III-1.

Time constraints prevented the participants from considering all of the initiatives that were generated. The initiatives not superimposed on the map should not be ignored by those responsible for action on the workshop findings, especially initiatives 60 and 70, which each received two votes.

The editors have preserved the participant's exact wording of the inhibitors and initiatives throughout this report. Communication of the concepts, to people that did not attend the workshop, would be enhanced by editing the inhibitors and initiatives. The complex structural models should also be analyzed and simplified wherever possible.

Finally, action should be taken quickly by the Office of Munitions so that the interest and enthusiasm generated at the workshop is not lost. While all participants seemed encouraged by the results from the workshop, they remained skeptical of any real change taking place. Both government and industry must act on initiatives within their own control and collaborate on the other initiatives if the problems of effectively acquiring SAF devices are to be resolved.

When a group of experts, such as the participants in the Fuze Industry Workshop, are attempting to define and resolve a complex problematic situation, it is important to enable them to explore relationships among the components of the situation and to derive the problematique (the system of inhibitors) of the situation. The significance of the relational work is attributed to the following factors.

- By exploring relationships among the components, the participants learn more about the meanings of individual inhibitors.
- By deriving the problematique, the participants become more deeply aware of the root causes of the situation.

- Being aware of root causes might help participants conceptualize corrective actions (initiatives) that address those root causes as opposed to initiatives that only deal with the symptoms.
- Resolving root causes might significantly contribute to the dissolution of symptomatic inhibitors.

Given the complexity of the situation, as clearly shown by the patterns of the structural models, additional group activity is recommended in an effort to collectively design a strategy for making progress. The design of a strategy will entail additional judgments by the participants with regard to relationships, such as similarity, priority, and sequencing, among the proposed initiatives. The editors of the report know from considerable experience with complex multidimensional situations that progress requires communication and integration of ideas into meaningful packages for action by a variety of actors, both public and private. In order for the actors to act responsibly, it is desirable to engage them in determining roles and responsibilities for the various initiatives included in the action package. Designing such a package will require the participation of the various sectors relevant to the fuze industry.

I. INTRODUCTION

The Safing, Arming, and Fuzing (SAF) industry has been in sharp decline in the past decade. The perceptions that SAF devices employ mature technology, are easy to build, and are inexpensive has resulted in continual underfunding of research, development, testing, and evaluation by both industry and government. This fact, combined with a lack of production requirements, has resulted in an erosion of the SAF industrial base. Today, the number of companies capable of producing quality SAF devices is decreasing.

In February 1990, the Office of the Under Secretary of Defense for Acquisition, Deputy Director Defense Research and Engineering, Tactical Warfare Programs, Office of Munitions, tasked the Institute for Defense Analyses (IDA) to explore problems endemic to the fuze industry and, once identified, formulate a corrective action plan. IDA worked in conjunction with the sponsor and the Defense Systems Management College (DSMC) to design a workshop for technical managers with relevant knowledge and expertise in the fuze industry. The sponsor selected the workshop participants, who, as a whole, represent almost three hundred years experience with SAF devices. The objectives for the workshop, established and agreed to prior to the workshop, were

1. To identify critical factors that inhibit DoD's ability to effectively acquire SAF devices.
2. To organize those factors into a structural representation that depicts how the factors influence each other.
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4. To superimpose the initiatives on the structural representation of the inhibiting factors, to show their relative saliency and effectiveness.

The workshop was held March 7-9, 1990, at the Radisson Mark Plaza Hotel in Alexandria, Virginia. During the workshop, the project team from DSMC and IDA led the participants through a structured problem solving methodology and recorded the results of the group deliberations. The participants were provided copies of interim results at every

break in the meeting. Table I-1 contains the agendas for the three-day meeting. A list of workshop participants is in Table I-2, and short biographies of the participants can be found in Appendix A. The points of contact within IDA, DSMC, and the sponsor are in Table I-3.

This report presents the activities, findings, and proposed solutions generated during the workshop. Only minimal interpretation of the results was performed by the editors. The purpose of this report is to provide the necessary documentation for thorough interpretation of the results by industry and government SAF device experts.

Chapter II of the report describes the development of an influence structure of inhibitors to effective acquisition of SAF devices. Appendix B presents the complete list of inhibitors generated by the participants and a summary of the clarification discussion for each inhibitor. Chapter III describes the generation of initiatives to ameliorate the inhibitors. Appendix C contains the complete list of the initiatives. Chapter IV contains comments made by the participants at the end of the workshop and suggestions for follow-on work.

Table I-1. The DoD Fuze Industry Workshop Agendas

Wednesday, March 7, 1990

8:30-9:00	Introductions and Overview
9:00-12:00	Generation and Clarification of Inhibitors
12:00-1:00	Working Lunch
1:00-5:00	Structuring of Inhibitors
6:30	Reception

Thur[illegible], March 8, 1990

8:30-8:45	Review of First Day's Work
8:45-11:00	Amending of Influence Map
11:00-12:00	Generation of Initiatives
12:00-1:00	Working Lunch
1:00-4:00	Clarification of Initiatives
4:00-5:00	Initial Mapping of Initiatives onto Influence Map

Friday, March 9, 1990

7:30-7:45	Review of Second Day's Work
7:45-10:00	Generation and Clarification of Initiatives
10:00-12:00	Mapping of Initiatives onto Influence Map
12:00-1:00	Working Lunch
1:00-3:00	Continuation of Mapping of Initiatives
3:00-3:30	Wrap-up

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II. INHIBITORS TO EFFECTIVE ACQUISITION OF SAFING, ARMING, AND FUZING DEVICES

This section defines the SAF device acquisition problematique as developed by the participants in the workshop. A problematique is a structure that shows how a set of problems are interrelated through negative influence relationships. This definition of the problem was developed through two iterations of first identifying inhibitors to the effective acquisition of SAF devices and then organizing those inhibitors into an influence structure.

A. DEVELOPMENT OF PRELIMINARY INFLUENCE STRUCTURE

1. Generation of Inhibitors

The Nominal Group Technique (NGT) [Ref. 1-4] was used to generate ideas about inhibitors. This technique begins with a triggering question that focuses the responses of the participants. The triggering question posed at the Fuze Workshop was

> **What are the critical factors inhibiting DoD's ability to effectively acquire SAFs?**

The participants worked silently for approximately 15 minutes, individually formulating their own list of critical factors, which were presented to the group round robin style. The comprehensive list of factors was recorded on large paper and displayed for the group. After the complete list was generated and recorded, each author explained and clarified his individual ideas. A table listing the 43 ideas generated and a summary of the clarifying discussions was distributed to the participants during the next break in the workshop. An edited version of this list is in Appendix B.

2. Determination of More Important Inhibitors

Each participant was asked to select the five most important inhibitors and to rank them from one to five, with a rank of one for the most important inhibitor. The subset of relatively more important inhibitors was used in developing the preliminary influence structure. Out of the 43 inhibitors, 30 received at least one vote, and 15 received two or

more votes. The 15 inhibitors that received two or more votes are listed in Table II-1. The complete details of the voting results are found in Table B-1 at the end of Appendix B.

Table II-1. Inhibitors That Received Two or More Votes in the First Vote

1. Conflict between DoD's best buy policy vs. what the Services practice, which is lowest bidder
3. Limited government tech base funding for fuzing development
4. Lack of production requirements
7. Lack of facilitization funding
8. Current approach of attempting to procure SAFs utilizing "build-to-print" data packages
9. Horrendous maze of ambiguous regulations, specifications, etc., that dictate how we conduct our business
11. Inability to prevent buy-ins
15. Top government management has adopted an adversarial role
19. Failure to initiate SAF development early in weapon systems development
20. Continual exhaustive audits performed by DoD agencies to assess compliance with regulations
21. Excessive pressure on delivery schedules at the expense of everything else
26. Decisions about fuzes are being made by primes/program managers who have not duly consulted fuze technical and production experts
27. Evolution of unrealistic government planning and contractor bidding
29. Dilemma of cost/competition advocacy overriding technical judgment in establishing qualified sources
38. Unrealistic approach to second- and multi-source competition

3. Structuring of Inhibitors

A computer-assisted methodology called Interpretive Structural Modeling (ISM) [Ref. 2-5] was employed to enable the group of participants to explore the influence relationship among the inhibitors. "The method is *interpretive* in that the group's judgment decides whether and how items are related. It is *structural* in that, on the basis of the relationships, an overall structure is extracted from the complex set of items. And it is *modeling* in that the specific relationships and overall structure are portrayed in graphic form." [Ref. 2] The computer supports the process by presenting pairs of items embedded in a contextual relation or generic question. After discussion, the group's judgment is determined by a majority vote. After all comparisons are made, the computer produces a structure that portrays the relationship among the items. The structure is examined by the group to check its validity and may be amended as required.

The contextual relationship used in the workshop to organize the inhibitors was

In the context of DoD's ability to effectively acquire SAFs, does inhibitor

A

significantly influence (impact negatively) inhibitor

B?

where A and B each represent one of the inhibitors. The inhibitors receiving the most votes were considered first. By the end of the first day of the workshop, the participants were able to consider the relationships among all 15 of the inhibitors that received two or more votes (shown in Table II-1) plus four others, namely

5. Inadequate attention to fuzing requirements by weapon system designers
6. Increased length of time to effect acquisition strategy--too many decision points
10. Shortage of qualified suppliers
13. Lack of awareness by program managers of complexity of SAFs

The resulting influence structure is shown in Figure II-1. The project team constructed a large version of this structure on the wall of the room, and printed copies also were distributed to the participants.

The arrows in Figure II-1 indicate that according to the judgment of the majority of the participants a significant negative influence relationship exists between the inhibitors. For instance, the participants felt inhibitor 4, "Lack of production requirements," influences negatively inhibitor 3, "Limited tech base funding for fuzing development," and inhibitor 7, "Lack of facilitization funding." The path taken when following a particular sequence of arrows connecting boxes on an influence structure is called a walk. If one focuses on a particular inhibitor, it influences all inhibitors to its right that can be reached by a walk. The same inhibitor is influenced by all inhibitors to its left that have walks reaching it.

When two or more inhibitors appear in the same box they should be interpreted as belonging to a cycle. Issues in a cycle are deemed to be mutually aggravating. For instance inhibitor 5, "Inadequate attention to fuzing requirements by weapon system designers," negatively influences inhibitor 13, "Lack of awareness by program managers of complexity of SAFs," and vice versa.

The organization of the inhibitors into an influence structure enables the participants to visualize the distinction between fundamental and symptomatic inhibitors. The more

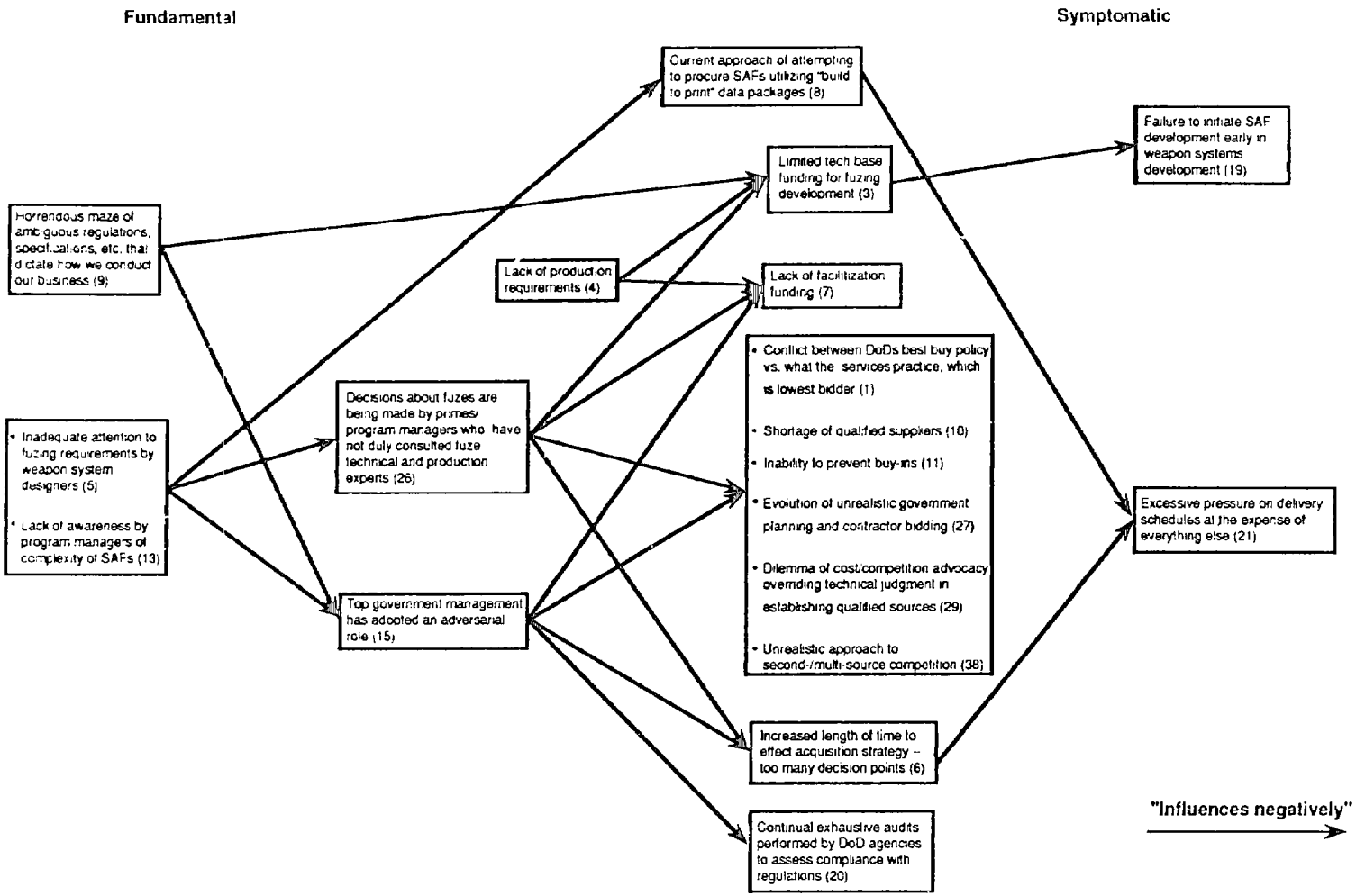


Figure II-1. Preliminary Influence Structure of Critical Factors Inhibiting DoD's Ability to Effectively Acquire SAFs

fundamental inhibitors appear on the left side of the figure while the more symptomatic appear on the right. It is interesting to note that two of the four inhibitors that received only one vote and were included in the influence structure formed a fundamental cycle, namely inhibitors 5 and 13. Such a finding highlights the need for performing relational work.

B. AUGMENTATION OF THE PRELIMINARY INFLUENCE STRUCTURE

The second day of the workshop began with a review of the preliminary influence structure. The participants were asked to study the structure to validate the relationships displayed. The participants found the structure shown in Figure II-1 to be accurate.

To satisfy the sponsor's desire for a thorough examination of the problematic situation, the preliminary influence structure was augmented. Through another session of NGT, the group generated 15 additional inhibitors, which appear as numbers 44 through 58 in Appendix B. Another vote was taken to identify the more important inhibitors. Only inhibitors not already incorporated into the preliminary influence structure were to be considered in the second voting. In the second vote, 25 inhibitors received one or more votes and 15 of these received two or more votes. Table II-2 lists the inhibitors that received two or more votes. The complete results of the second vote are shown in Table B-2 in Appendix B.

The participants again used ISM to explore the influence relationships among the more important inhibitors. After approximately three hours of work, 17 additional inhibitors were incorporated into the influence structure. The set of 17 inhibitors includes all 15 that received two or more votes (Table II-2) and the following two inhibitors

42. Arbitrary restrictions on offshore electronic components
49. Reluctance of fuze community to adopt industry/commercial acquisition practices

The augmented influence structure, shown in Figure II-2, was distributed to the participants at the beginning of the third day.

Figure II-2 should be interpreted in the same manner as described for Figure II-1. An interesting observation about the augmented influence structure shown in Figure II-2 is that only two of the 17 inhibitors added to the preliminary influence structure were deemed to be fundamental. These are inhibitor 52, "Mis- and micro-management by Congress on priorities, funding, and acquisition regulations," and inhibitor 45, "Complex procurement

Table II-2. Inhibitors Receiving Two or More Votes in Second Vote

14. Non-developmental item (NDI) ethics--fuze on the shelf but not ready for production
16. Inadequate communication between fuzing and munition designers
22. Continuing erosion of the fuze base
24. Reliance upon inspection instead of problem prevention to provide quality
35. Unstable design requirements
39. Excessive pressure on profits
45. Complex procurement regulations
46. Failure to establish environmental characteristics for a given fuze
47. The decrease of overall fuzing budget
50. Inhibited communication of plans, requirements, and acquisition-related data from government to industry
51. Poor management by producers
52. Mis- and micromanagement by Congress on priorities, funding, and acquisition regulations
53. Erosion of fuze design experience
54. Failure of Congress/Services to stabilize outyear budget
56. Reluctance of fuze community to blame itself

regulations." According to the majority judgment of the participants the fundamental inhibitors to effective acquisition of SAF devices are

4. Lack of production requirements
5. Inadequate attention to fuzing requirements by weapon system designers
9. Horrendous maze of ambiguous regulations, specifications, etc., that dictate how we conduct our business
13. Lack of awareness by program managers of complexity of SAFs
45. Complex procurement regulations
52. Mis- and micromanagement by Congress on priorities, funding, and acquisition regulations

The inhibitors that appear to be symptomatic are

19 Failure to initiate SAF development early in weapon systems development
22. Continuing erosion of the fuze base
36. Poor quality attention to detail by both designers and manufacturers.
51. Poor management by SAF producers

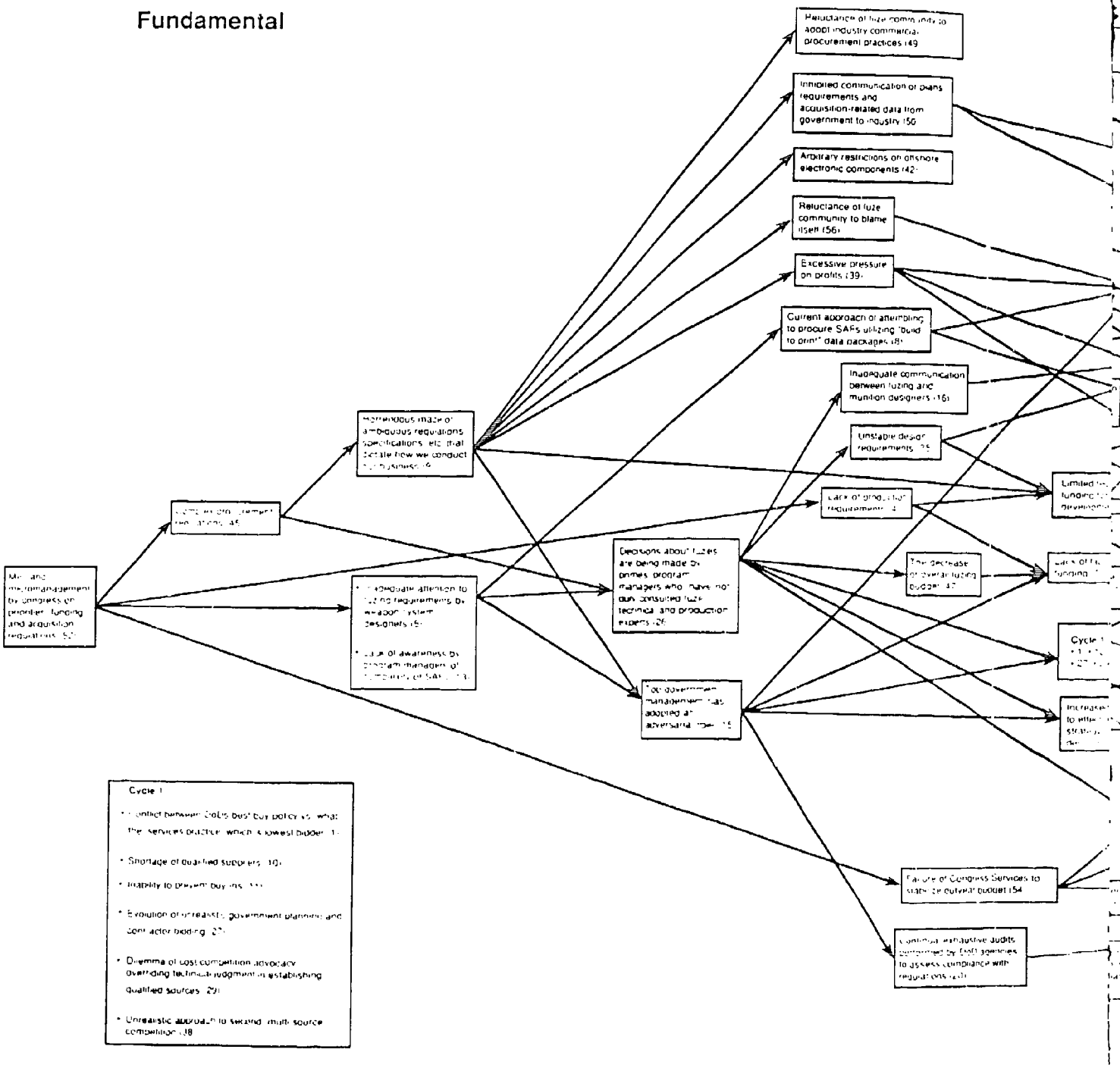
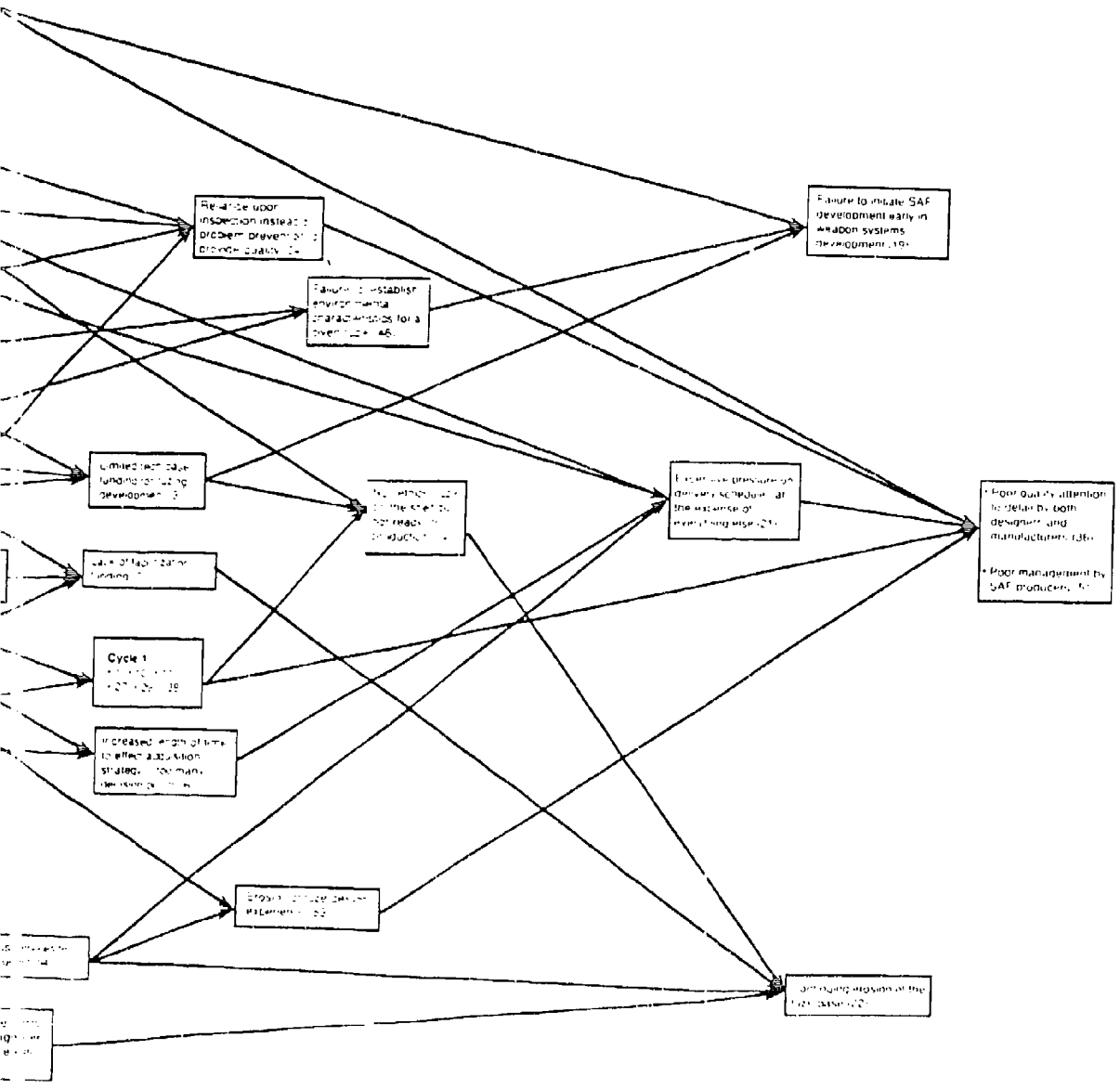


Figure II-2. Augmented Influence Structure of Critical Factors Inhibiting DoD's Ability to Effectively Acquire SAFs

Symptomatic



"Influences negatively"

III. INITIATIVES TO AMELIORATE THE SITUATION

The afternoon of the second day and entire third day were allocated to the task of generating initiatives to ameliorate[1] the system of inhibitors to effective SAF device acquisition and superimposing these initiatives onto the augmented influence structure.

A. GENERATION OF INITIATIVES

A total of 59 initiatives were generated by the participants using NGT with the triggering question

> **What initiatives will ameliorate the inhibitors and enable DoD to effectively acquire SAFs?**

The generation of initiatives was followed by a discussion for clarification of each idea. The initiatives and a summary of the clarifying discussions appear in Appendix C.

The participants were then asked to vote for the initiatives they considered both desirable and implementable. Out of the total of 59 initiatives, 31 received at least one vote, and 15 received two or more votes. The initiatives that received two or more votes are listed in Table III-1. The complete details of the voting are shown in Table C-1 of Appendix C.

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[1] Ameliorate means to make better or more tolerable.

Table III-1. Initiatives that Received Two or More Votes

60. Congress should give a clear, concise mandate to DoD on fuze system acquisition and back off from micromanaging
62. Establish a national policy, such as a chief executive directive or initiative, to promote a climate of partnership, teamwork, and trust rather than one of adversity between government and the defense industry
66. Persuade SAF-user decision makers on the importance to them of excellent fuzing, and on how to get it
70. Establish a DoD policy that all munition PMs/primes must submit a written report to the Secretaries of the Services of how they consulted the in-house and industrial fuze expertise, their response, and his response, prior to any system spec release
74. Emphasize a quality, affordable product and on-time delivery through profit incentives
76. Implement two-year budget cycle
82. Force the developer to build LRIP so as to deliver a qualified TDP for future competition
87. Amend CICA to ease the roadblocks to exceptions/waivers and decentralize decision authority
88. Promote best buy awards instead of low bidder awards.
90. Civilianize PM structure and stop rotational assignments
93. Split out fuzes from weapon system prime contract
98. Institute multi-year buy policy
106. For each new weapon system, establish an advisory review team consisting of personnel expert in the applicable component technologies including SAFs
109. Promote better qualification of SAF bidders
118. Expand tech base funding to demonstrate mature technology to enhance technology insertion and reduce engineering development risk

B. SUPERIMPOSITION OF INITIATIVES ONTO THE INFLUENCE STRUCTURE

The final task for the participants was to consider the relationship of the initiatives and the inhibitors. ISM was used with the following contextual relationship

In the context of enhancing our ability to acquire SAFs, does initiative

X

significantly contribute to the amelioration of inhibitor

A?

where X represents an initiative for ameliorating the situation and A represents an inhibitor found in the influence structure. After approximately four hours of work, 13 of the inhibitors were superimposed onto the influence structure. The results are shown in Figure III-1. Initiative number 98 can be used as an example to illustrate how Figure III-1 should be interpreted. Initiative 98, "Initiate multi-year buy policy," appears at the bottom of Figure III-1 and directly addresses inhibitor 7, "Lack of facilitization funding," and inhibitor 54, "Failure of Congress/Services to stabilize outyear budget." Because inhibitor 54 aggravates inhibitor 22, as shown by the arrow linking 54 and 22, it is reasonable to infer that initiative 98 will indirectly contribute to the resolution of 22, "Continuing erosion of the fuze base." Similar interpretive inferences can be made by studying the superposition map.

Table III-2, constructed by studying Figure III-1, shows only the inhibitors directly ameliorated by the initiatives. As shown in Table III-2, initiative 106, "For each new weapon system, establish an advisory review team consisting of personnel expert in the applicable component technologies including SAFs" was found to directly ameliorate the greatest number of inhibitors (six). Other influential initiatives are 74, "Emphasize a quality, affordable product and on-time delivery through profit incentives," initiative 62, "Establish a national policy, such as chief executive directive or initiative, to promote a climate of partnership, teamwork, and trust rather than one of adversity between the government and the defense industry," and initiative 109, "Promote better qualification of SAF bidders." Initiatives 74, 62, and 109 were determined to ameliorate five, four, and four inhibitors respectively.

Another way to assess the initiatives superimposed onto the influence structure is to identify which inhibitors received the most attention. From that perspective, inhibitor 39, "Excessive pressure on profits," was addressed by six initiatives. Inhibitor 15, "Top government management has adopted an adversarial role," was addressed by five initiatives and initiative 53, "Erosion of fuze design experience," was addressed by four initiatives. It is interesting to note that initiatives 74, 88, and 109 address inhibitors 39, 15, and 53. Additionally, initiatives 62 and 87 also address inhibitors 15 and 39.

Due to time constraints, only 13 of the 15 initiatives that received two or more votes were considered. This should be interpreted as work not yet finished rather than a lack of importance of the initiatives. The Office of Munitions will take another look at all of the initiatives generated in an attempt to identify other good candidates for implementation.

By reviewing Table III-2 in conjunction with Figure III-1, some underlying patterns can be observed.

- The majority of the initiatives proposed by the participants enter the superposition map at the middle level without ameliorating any of the fundamental inhibitors.
- The only initiative that addresses fundamental inhibitors is number 90, "Civilianize PM structure and stop rotational assignments." As shown in Figure III-1 and Table III-2 this initiative will directly affect inhibitors 5, "Inadequate attention to fuzing requirements by weapon system designers," and 13, "Lack of awareness by program managers of complexity of SAFs," which belong to the fundamental side of the influence structure.
- Of the thirteen initiatives superimposed on the influence structure, none addressed the root cause, which appears to be number 52, "Mis- and micromanagement by Congress on priorities, funding, and acquisition regulations." This outcome may be a result of the instructions, given to the participants prior to voting, to consider initiatives that were both desirable and implementable. It is conceivable that initiatives for dealing with inhibitor 52 should be proposed by a different panel of experts, i.e., people with knowledge in the affairs of Congress.

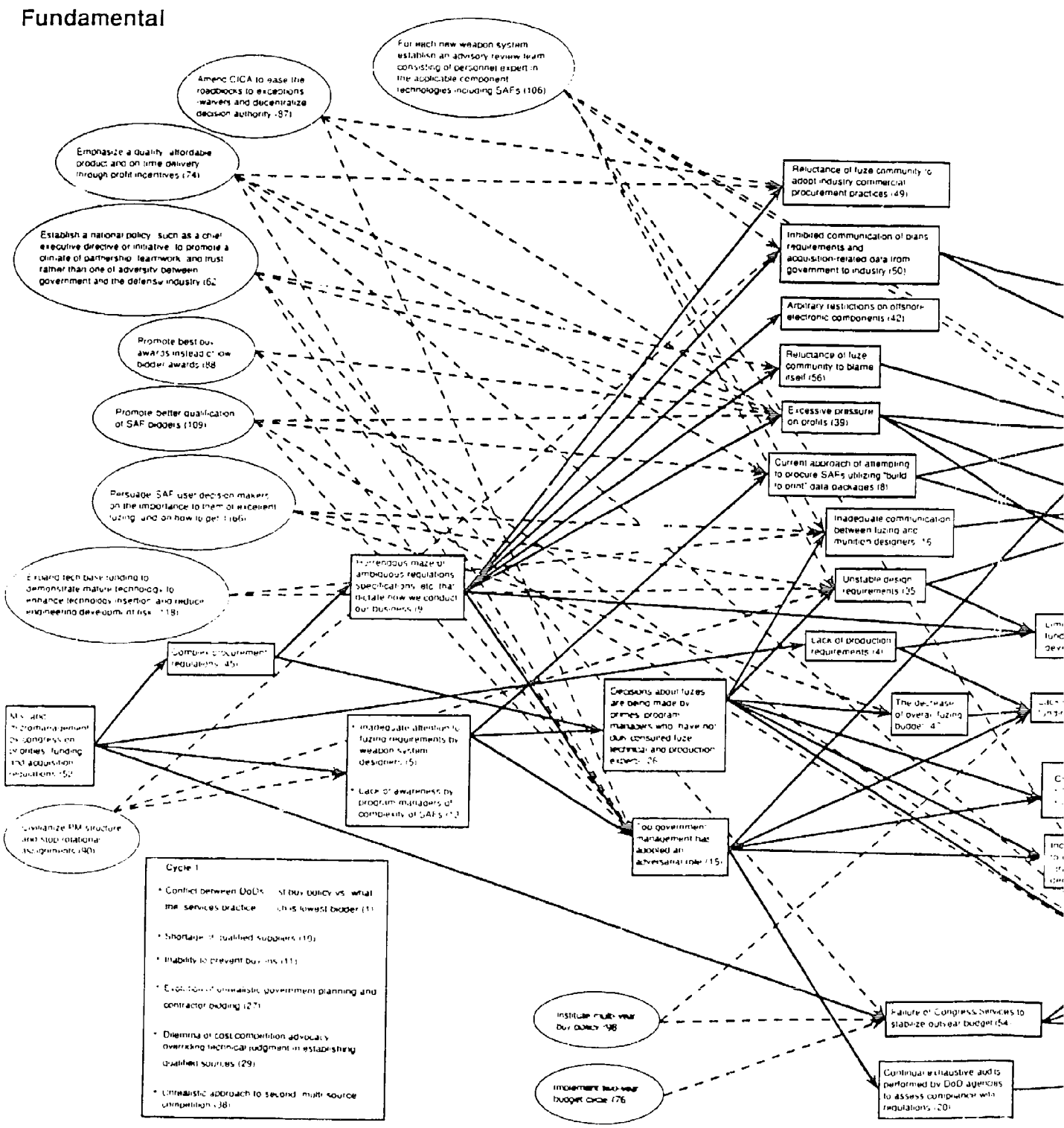

Figure I..1. Superimposition of Ameliorating Initiatives onto Influence Structure of Critical Factors Inhibiting DoD's Ability to Effectively Acquire SAFs

Symptomatic

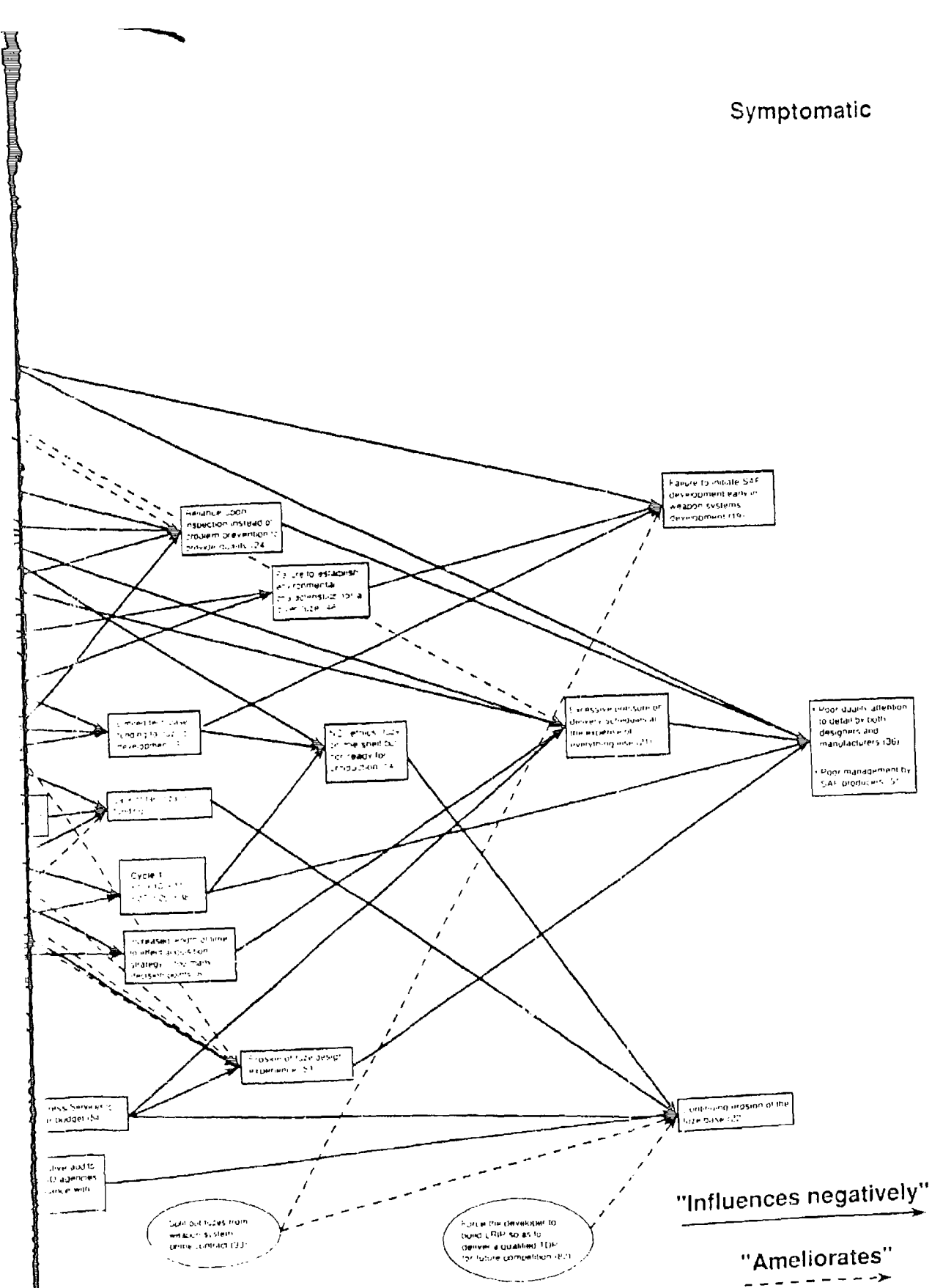

Table III-2. Selected Initiatives and Directly Ameliorated Inhibitors

Initiative	Inhibitors
62. Establish a national policy, such as a chief executive directive or initiative, to promote a climate of partnership, teamwork, and trust rather than one of adversity between government and the defense industry	15. Top government management has adopted an adversarial role 39. Excessive pressure on profits 54. Failure of Congress/Services to stabilize outyear budget 56. Reluctance of fuze community to blame itself
66. Persuade SAF-user decision makers on the importance to them of excellent fuzing, and on how to get it	16. Inadequate communication between fuzing and munition designers 35. Unstable design requirements 47. The decrease of overall fuzing budget
74. Emphasize a quality, affordable product and on-time delivery through profit incentives	8. Current approach of attempting to procure SAFs utilizing "build-to-print" data packages 15. Top government management has adopted an adversarial role 39. Excessive pressure on profits 49. Reluctance of fuze community to adopt industry/commercial acquisition practices 53. Erosion of fuze design experience
76. Implement two-year budget cycle	54. Failure of Congress/Services to stabilize outyear budget
82. Force the developer to build LRIP so as to deliver a qualified TDP for future competition	22. Continuing erosion of the fuze base
87. Amend CICA to ease the roadblocks to exceptions/waivers and decentralize decision authority	15. Top government management has adopted an adversarial role 39. Excessive pressure on profits 49. Reluctance of fuze community to adopt industry/commercial acquisition practices
88. Promote best buy awards instead of low bidder awards	15. Top government management has adopted an adversarial role 39. Excessive pressure on profits 53. Erosion of fuze design experience

(Continued)

Table III-2. Selected Initiatives and Directly Ameliorated Inhibitors (continued)

Initiative	Inhibitors
90. Civilianize PM structure and stop rotational assignments	5. Inadequate attention to fuzing requirements by weapon system designers 13. Lack of awareness by program managers of complexity of SAFs 39. Excessive pressure on profits 50. Inhibited communication of plans, requirements and acquisition-related data from government to industry
93. Split out fuzes from weapon system prime contract	19. Failure to initiate SAF development early in weapon systems development 22. Continuing erosion of the fuze base
98. Institute multi-year buy policy	7. Lack of facilitization funding 54. Failure of Congress/Services to stabilize outyear budget
106. For each new weapon system, establish an advisory review team consisting of personnel expert in the applicable component technologies including SAFs	16. Inadequate communication between fuzing and munition designers 21. Excessive pressure on delivery schedules at the expense of everything else 24. Reliance upon inspection instead of problem prevention to provide quality 35. Unstable design requirements 50. Inhibited communication of plans, requirements and acquisition-related data from government to industry 53. Erosion of fuze design experience
109. Promote better qualification of SAF bidders (109)	8. Current approach of attempting to procure SAFs utilizing "build-to-print" data packages 15. Top government management has adopted an adversarial role 39. Excessive pressure on profits 53. Erosion of fuze design experience
118. Expand tech base funding to demonstrate mature technology to enhance technology insertion and reduce engineering development risk	16. Inadequate communication between fuzing and munition designers 35. Unstable design requirements

IV. SUMMARY

A. PARTICIPANT COMMENTS ON THE WORKSHOP

At the close of the meeting, each participant was given the opportunity to comment on the workshop, the methodologies used, and the results generated. The participants' comments are summarized as follows:

- Good issues and solutions were identified during this workshop--some of which were surprises. I learned a lot during this workshop. The process provided for an excellent prioritization of the issues and made excellent use of everyone's time during the meeting. The process also facilitated separating subjective opinions from objective observations. The key to our success will be what happens next--what really gets done as a result of our efforts.
- I was impressed by the fact that three diverse groups--large companies, small and medium companies, and the government--each with very different objectives could be brought together in such a way that the objectives and agendas of all three groups seemed to merge during the meeting. I believe we have come up with some hopeful solutions.
- This workshop was a very productive and enlightening experience. We should apply the process in our lab. The process clarified a lot of confusion. I am enthusiastic about the potential of the solutions posed. Key is where do we go from here.
- Excellent system for arriving at consensus. Fuzes span the range of design complexity--from relatively simple to highly complex. The current trend toward smart munitions will effect the types of inhibitors and initiatives in the future. The generic inhibitor appears to be that the SAF device development cycles are incompatible with those of the weapon system. The initiatives appear to break down into two areas: expanding the tech base and reducing R&D risk and adopting proven industry commercial practices that can shorten development time.
- This type of meeting was a new experience for me. I learned more than I contributed. I hope we will be updated as a team regarding the outcome of our recommendations, and I strongly recommend that a second workshop be held

after the participants have received information regarding implementation of our ideas.

- I came into this workshop looking for ways to overcome the government's adversarial role. But all different views were presented. At the beginning of the workshop, I could not imagine what the outcome would be. IDA has a process to take diverse points of view and put them together to arrive at a problem definition. The process then taps everyone's brain for a solution. I liked the process as a whole, especially the fast turnaround--the fact that the data was quickly fed back for the participants to consider. After reviewing all that was accomplished here, I would give this workshop a high rating, even without having the results in hand.
- I was very impressed by the process--we were able to vote, structure ideas, debate, obtain consensus, and develop relationships. We have produced a huge pile of results in just three days. I hope the follow-up to the workshop-recommended initiatives will be as fruitful as the workshop results themselves.
- This was my first experience with a structured process such as this. I felt the time was well spent--we were prompted to be well organized and focused. But I have a feeling that some things were missed. Probably these results are the best that could be expected from a three-day meeting. I am looking forward to the report and the conclusions.
- I thought it was a good process and an enjoyable experience. The things the fuze industry could not accomplish in the past perhaps can be achieved now because of the turn in the world. We are in a time when dramatic changes can be made in DoD. A look at the map of the superimposition of initiatives on the inhibitors reveals that the group tended to solve problems at the symptomatic level. I believe this is because of our nature. I implore the Office of Munitions to look at those initiatives that may not have been voted high enough to be included on the map but that might influence the fundamental inhibitors.
- This exercise was very beneficial. I perceive that this method made the whole greater than the sum of the parts. A mere compilation from each participant working separately could not have produced all of the inhibitors and initiatives that were produced here. I also saw the three groups coming together--the process built on the team. This team spirit should not just be limited to the people here- he whole fuze community must come together to enable people outside the ommunity to recognize how important fuze work is. I have noticed that the additional inhibitors we added to the original list on the second day ended up being on the symptomatic side of the map, not the fundamental side. There is a need to work on the fundamental inhibitors. Each of us has more problems day to day because of inhibitors on the symptomatic side, but as a group we should be working on the fundamental side.

- I was impressed by the process of taking a group of people composed of three different groups and getting them to focus and come up with good recommendations on how to improve the R&D and production of fuzes. The amount of work accomplished and the numerous outputs will lead to a powerful report. A question still remains in my mind, however, as to whether my grandson or even great grandson will see any of the changes we have proposed here.
- It was a delightful session.
- The group thinking was stronger than any individual thinking--even that of a genius.

The following comments were provided by several participants after reviewing the initial draft of the workshop report.

- Initiative 70, "Establish a DoD policy that all munition PMs/primes must submit a written report to the Secretaries of the Services of how they consulted the in-house and industrial fuze expertise, their response, and his response, prior to any system spec release," would ameliorate inhibitors
  - 5. Inadequate attention to fuzing requirements by weapon system designers
  - 13. Lack of awareness by program managers of complexity of SAFs
  - 14. NDI ethics--fuze on the shelf but not ready for production
  - 16. Inadequate communication between fuzing and munition designers
  - 19. Failure to initiate SAF development early in weapon systems development
  - 26. Decisions about fuzes are being made by primes/program managers who have not duly consulted fuze technical and production experts
  - 46. Failure to establish environmental characteristics for a given fuze
  - 53. Erosion of fuze design experience
- The six Workshop Industry representatives were from companies currently very successful in the fuzing business, collectively responsible for approximately half of the total fuze market. Therefore, a sampling of opinions from fuzing contractors closer to the "erosion" edge of the business would be appropriate. Circulation of the final report to the entire Fuzing Industry (40-50 total companies) for review and comment is suggested.
- The ground rule of voting for only five of the inhibitors and ameliorators caused the workshop participants to vote for tangible near term elements rather than the more complex/abstract issues. For example, "Excessive pressure on profits" (inhibitor number 39), received only two votes (both 1), even though this element was found to be ameliorated by six initiatives. Likewise, initiative

number 62, "Establish a national policy, such as a chief executive directive or initiative, to promote a climate of partnership, teamwork, and trust rather than one of adversity between government and the defense industry," received only two votes (both 1) even though it influences four inhibitors. (In fact, initiative number 62 should be shown on the map to also influence inhibitor number 52, "Mis- and micromanagement by Congress on priorities, funding, and acquisition regulations.") An alternative to voting for only five elements might be to rate all in a descending order of importance, regardless of implementability; or to assign each a 1, 2, or 3 priority rating of importance, then add up the numbers for a consensus ranking. Initiatives could also be ranked according to ease of implementation.

B. FOLLOW-ON WORK

Time constraints prevented the participants from considering all of the initiatives that were generated. The initiatives not superimposed on the map should not be ignored by those responsible for action on the workshop findings, especially initiatives 60 and 70, which each received two votes.

The editors have preserved the participant's exact wording of the inhibitors and initiatives throughout this report. Communication of the concepts, to people that did not attend the workshop, would be enhanced by editing the inhibitors and initiatives. The complex structural models should also be analyzed and simplified wherever possible.

Finally, action should be taken quickly by the Office of Munitions so that the interest and enthusiasm generated at the workshop is not lost. While all participants seemed encouraged by the results from the workshop, they remained skeptical of any real change taking place. Both government and industry must act on initiatives within their own control and collaborate on the other initiatives if the problems of effectively acquiring SAF devices are to be resolved.

C. CONCLUSIONS

When a group of experts, such as the participants in the Fuze Industry Workshop, are attempting to define and resolve a complex problematic situation, it is important to enable them to explore relationships among the components of the situation and to derive the problematique (the system of inhibitors) of the situation. The significance of the relational work is attributed to the following factors.

- By exploring relationships among the components, the participants learn more about the meanings of individual inhibitors

- By deriving the problematique, the participants become more deeply aware of the root causes of the situation
- Being aware of root causes might help participants conceptualize corrective actions (initiatives) that address those root causes as opposed to initiatives that only deal with the symptoms
- Resolving root causes might significantly contribute to the dissolution of symptomatic inhibitors

Given the complexity of the situation, as clearly shown by the patterns of the structural models, additional group activity is recommended in an effort to collectively design a strategy for making progress. The design of a strategy will entail additional judgments by the participants with regard to relationships, such as similarity, priority, and sequencing, among the proposed initiatives. The editors of the report know from considerable experience with complex multidimensional situations that progress requires communication and integration of ideas into meaningful packages for action by a variety of actors, both public and private. In order for the actors to act responsibly, it is desirable to engage them in determining roles and responsibilities for the various initiatives included in the action package. Designing such a package will require the participation of the various sectors relevant to the fuze industry.

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Appendix A

PARTICIPANT BIOGRAPHIES

PARTICIPANT BIOGRAPHIES

PETER BELLINO, MOTOROLA, INC.

Mr. Bellino has been involved with the fuze industry since 1956 and is currently head of Fuze Group Marketing for Motorola, Inc., Government Electronics Division, Scottsdale, Arizona. He supervises marketing managers responsible for all fuze bookings, ensures proper formulation and implementation of short- and long-range marketing strategies, and implements a long-range planning capability for fuze marketing. Prior to Motorola, Mr. Bellino was at Red Bank, New Jersey, as a marketing and technical liaison to the US Army for radar products, including airborne surveillance and ground target acquisition radars, transponders, positioning systems, displays, and other associated equipments. He also marketed electronic warfare systems and proximity projectile fuzes to the US Army and Navy and performed engineering and marketing liaison functions for technical products and capabilities such as communications, radar, radar beacons, display and readout, undersea electronics, space communications and support equipment, electronic warfare, and fuzing and guidance.

As a Requirements Engineer for the Mergenthaler Linotype Company, Brookyln, New York, he developed technical requirements for electromechanical hardware with Government and industrial customers. As Program Manager for the same company, he was responsible for the complete administration of various US and foreign Government prime and subcontracts. Mr. Bellino's military service consisted of nine years Army service as Surveillance and Anti-aircraft (AA) Radar and Integrated Fire Control Platoon Leader in 90 mm and Nike-Ajax Anti-Aircraft Batteries.

ALBERT E. DILZ, KDI PRECISION PRODUCTS, INC.

Mr. Dilz has been involved in fuzing design, development, and management for 35 years. He performed fuzing research and development (R&D) with the Avco Ordnance Division for 13 years before joining KDI Precision Products in 1968, where he has been responsible for new business planning and product development. He is presently President and General Manager of KDI Precision Products, Inc.

ROBERT C. ERHART, AIR FORCE ARMAMENT LABORATORY

Mr. Erhart has over 24 years experience at the Air Force Armament Laboratory (AFATL) in the design, development, and acquisition of fuzes for the USAF. He received the AFATL Scientific Achievement Award, the Air Force Systems Command (AFSC) Certificate of Merit, and the Aerospace Education Foundation Science and Engineering Award for his contributions to the development and production of the FMU-56 Cluster Bomb Proximity Fuze. He has made major contributions to standardization and interoperability as the US principal member of NATO AC/310 SG II, through support to the North Atlantic Treaty Organization (NATO) Air Armament Working Party (AAWP), and as United States Air Force (USAF) principal member to the DoD Fuze Engineering Standardization Working Group (FESWG). Under the FESWG, Mr. Erhart currently heads the tri-service ad hoc group responsible for revision D of MIL-STD-1316, and is drafter of MIL-STD-1901 on rocket motor ignition safety design.

JOHN W. FAHL, ENGINFERING SUPPORT DIRECTORATE, US ARMY ARMAMENT RESEARCH, DEVELOPMENT, AND ENGINEERING CENTER

Mr. Fahl has had a total of 15 years of fuze experience. For the past five years, he has served as branch chief for all fuze production engineering support and other infantry items at headquarters (HQ), Armament, Munitions, and Chemical Command (AMCCOM), Rock Island, Illinois This branch acts as configuration management officers, manages product improvement programs and engineering studies directs resolution of production and field problems for Army fuzes in full scale production as well as for handgrenades, mines, pyrotechnics, demolitions, flame and incendiary, rockets, mortars, and other infantry items. Mr. Fahl has been a member of the Army Fuze Safety Review Board, a fuze project engineer in the same branch, and a project officer for fuzes in the HQ R&D Directorate. Mr. Fahl's 30 years of government service includes working for the Navy and Air Force. He has experience in electronic circuit design, display systems, guidance and control, electronic warfare, turret controls and stabilization, and automatic weapons.

STEVEN E. FOWLER, NAVAL WEAPONS CENTER, CHINA LAKE

Mr. Fowler has 18 years experience in research, development, testing, and evaluation (RDT&E) of Safe-Arm Devices and Contact Sensors at the Naval Weapons Center, China Lake, California. Currently he is the Head of the Fuze Safe-Arm Division, Ordnance Systems Department. He is responsible for the design, development, and evaluation of safe-arm devices, rocket motor arm-fire devices, contact sensors, and explosive components for all Navy Missile and Free-Fall Weapon Systems. Prior to his current position, he was the Head of the Exploratory Development Branch, responsible for supervising and managing the development of new concepts for safe-arm devices and fuzing for explosive-ordnance. Mr. Fowler played a major role in determining the safety requirements for using microprocessors in fuzing applications. He also served as Fuze Technology Manager, managing the development of new technology for safe-arm devices, proximity fuzes, contact fuzes, and explosive components. Prior to 1980 Mr. Fowler was an Electronics Engineer in the Exploratory Development Branch, responsible for the design, testing, and fabrication of electronic-optical circuitry of various safe-arm device and fuzing systems for explosive-ordnance. The main responsibility during this time was the conceiving of new concepts to be applied to fuzing.

PHILIP F. INGERSOLL, HARRY DIAMOND LABORATORIES, US ARMY LABORATORY COMMAND

Mr. Ingersoll has been employed at the Army's Harry Diamond Laboratories (HDL) for 27 years and is currently the director of the 200-person Technology Applications Laboratory The primary business of the Technology Applications Lab is the design and development of Army electronics, including proximity fuzes, jammers, small generators, and battlefield automation. He spent many years as an active design engineer and was the project leader on several projects including the design and development of the multi-option fuze for mortars. He was chief of the Field Test Branch, which conducted nearly all of HDL's field testing using their own 1600-acre test range in Maryland and other government test ranges such as White Sands Missile Range and Yuma Proving Ground. While Mr. Ingersoll was Chief of the Electronic Warfare Branch, one of the major projects was the design and testing of an artillery-delivered communications jammer, which used high-rate lithium reserve batteries, electronic circuits, and ingenious mechanical systems and which required wind tunnel testing of antennas and parachutes, helicopter drop tests, and artillery field test firings.

JOHN O. JAMES, HAMILTON TECHNOLOGY, INC.

Mr. James has had 14 years experience as ultimate technical responsibility for all fuze programs at Hamilton Technology, Inc., Lancaster, Pennsylvania For the past four years he has been the Director, Electronic Products and Development, with ultimate technical responsibility for all electronics manufacturing programs. Technologies included are high-g electrical and mechanical fuzes and associated devices, including development programs.

WILLIAM C. KURTZ, GENERAL ELECTRIC COMPANY

Mr. Kurtz is the Program Manager and Senior Marketing Representative for Advance Technology Programs at General Electric Company. He has been a member of the American Defense Preparedness Association's (ADPA) Fuze Committee since 1980 and is the current chairman. Mr. Kurtz joined the General Electric Company, Armament Systems Department in 1966 and assumed responsibilities for marketing and advance programs management for all fuzing, advance technology munitions, and weapons programs. This included the Rheinmetall/GE co-development of a shaped-charged round of ammunition, liquid propellant, EMG, and cased telescoped weapon systems. Currently, he is the Program Manager for ARDEC's XM 774 Improved Fuzing System contract for Tank HEAT Ammunition.

Mr. Kurtz was previously employed by FMS Defense Technology Laboratories as a Marketing Representative and Proposal Coordinator within the Advance Munitions Design Group, responsible for a number of Army and Air Force programs. He held the position of Marketing Product Manger for Aerojet Ordnance Division with responsibility for fuzing, biological and chemical ordnance, and Army aircraft weaponization programs. As Project Engineer in the Warheads and Special Projects Laboratory of the Ammunition Engineering Group for the US Army at Picatinny Arsenal, he had engineering responsibility for the T52 Mine Fuze and assisted in the design of a fuze modification for the 2.75 Rocket Munitions System.

HOWARD F. MACGRADY, US ARMY ARMAMENT RESEARCH, DEVELOPMENT, AND ENGINEERING CENTER

Mr. MacGrady's total career (except for 3-1/2 years) has been dedicated to all aspects of the fuze business. He began his federal career as a draftsman at Frankford Arsenal, Philadelphia, Pa., in August 1953. At the close of Frankford Arsenal, Mr. MacGrady was reassigned to Picatinny Arsenal, New Jersey. He served as a Systems Engineer with the original Army Fuze Management Office, Armament Systems Division, a PM for Mines, Countermine and Demolitions, and he directed the Volcano Program through Type Classification. He is currently the US Army's Deputy Product Manager for Fuzes. He is responsible for centralized across-the-board oversight management of all Army fuze programs throughout the life cycle. He is primary POC on all fuze design safety matters, and acts as Vice Chairman for the Army Fuze Safety Review Board, serves as the Army focal point for Army fuzes in Tri-Service Fuze Materiel Activities/Actions and NATO fuze business.

DONALD K. MACLENNAN, JR., HONEYWELL DEFENSE SYSTEMS GROUP

Mr. MacLennan has been employed at Honeywell, Inc. since 1952. His experiences include 36 years in Marketing Management in the munitions business; participation in the acquisition and development of most Honeywell munition and fuze programs; participation in the establishment and review of most Honeywell Defense System Group munitions and fire control Internal Research and Development (IR&D) programs; and establishment of and five years service in Honeywell's Marketing Office near Picatinny Arsenal. Mr. MacLennon is presently Manager of Advanced Technology and Special Projects Marketing, Honeywell Defense Systems Group. He has served as a member of a non-DoD team to review and comment on the DoD Munitions Technology Base, a member of the DoD Fuze Peer Review Group to evaluate the effectiveness and worth of all DoD Fuze Tech Base Programs, a consultant to the committee convened to respond to the DDR&E recommendation to establish a single DoD Fuze Development Organization, and consultant to the Army Materiel Command Committee: Armament to study the recommendation of the Army Materiel Acquisition Review Committee (ARMARC) regarding the development of what has become AMCCOM.

ROBERT E. MOWRIS, ACCUDYNE CORPORATION

Mr. Mowris has been involved in the production of SAF devices since 1952. He is currently Executive Vice President for Accudyne Corporation, Janesville, Wisconsin He has been the Marketing Manager for E. Walters and Co., Inc., Elk Grove Village, Illinois, and also served in various positions with Gibbs Manufacturing and Research Corporation, Janesville, Wisconsin. He began his career as an electronics project engineer doing research and development work on high power electronic countermeasures (ECM) equipment and transmitters and receivers, high power transmitting equipment, UHF-VHF receiver development, APR-18 ECM-receiver design, Apt-13, and VHF-UHF region antenna design.

Appendix B

CRITICAL FACTORS INHIBITING DoD'S ABILITY TO EFFECTIVELY ACQUIRE SAF DEVICES

CONTENTS

TABLES

CRITICAL FACTORS INHIBITING DOD'S ABILITY TO EFFECTIVELY ACQUIRE SAF DEVICES

This appendix contains the inhibitors to effective SAF device acquisition generated by the workshop participants, a summary of the clarifying discussion about each inhibitor, and the ranked votes that the inhibitors received. The wording of each inhibitor (in bold print) is that of the participant without any editing. The bullets following each inhibitor are major points that were captured from the discussion for clarification. Inhibitors withdrawn by the authors remain in the list and are marked as deleted.

A. LIST OF INHIBITORS

Inhibitors numbered 1 through 43 were generated during the first day of the workshop. The remaining inhibitors (numbers 44-58) were generated on the second day, after the preliminary influence structure (Figure II-1) had been created.

1. Conflict between DoD's best buy policy vs. what the Services practice, which is lowest bidder

- Selecting the lowest bidder is not the best acquisition practice for R&D fuzing problem
- Procuring agency buys the bottom line, but the lowest bidder cannot always produce what was promised
- Original equipment manufacturer (OEM) often has the upper hand, even though their product may cost more
- Rock Island, which buys most of the fuzes, uses "low buck" for decisions as standard practice

2. Fuzing is last on feeding chain of funding

- Weapon systems are a line item in the budget
- Subsystems, such as the guidance system, are funded first, fuzing is funded last and gets only what is left over

3. **Limited government tech base funding for fuzing development**

- Very few engineers are left that can design a fuze--little funding provided for tech base
- If tech base money does not increase, engineers will not stay in fuze industry
- New fuze *design* engineers are not being created--cannot put fuze *production* engineer on a new problem to solve a new threat
- IR&D also diminishing over the years which compounds the problem
- Folly to fund conversion of foreign designs if US tech base is eroding

4. **Lack of production requirements**

- Contractors make their money in production--if there are no requirements for designing new fuzes, companies will get out of fuze business
- Contractors cannot recover investments (IR&D) if they do not produce

5. **Inadequate attention to fuzing requirements by weapon system designers**

- The fuze is unimportant to many weapon system designers, and SAF is not considered until late in the design process
- Resulting fuze is less effective

6. **Increased length of time to effect acquisition strategy--too many decision points**

- One program took 26 decision points to approve weapon system
- A simple mortar time fuze recently took 18 months when it should have taken 2 to 3 months at the most.

7. **Lack of facilitization funding**

- Government used to have funding for facilitization, but not recently
- In Process Facilitization (IPF) was a program that was used to facilitize, but too much money was spent in the past on facilities that were never used
- If contractors capitalize themselves, they need longer programs, larger production runs, and more guarantee of return on investment
- If government is not going to facilitize industry, then the write-off rules must be revised (e.g., numerical control (NC) tooling expenses including tapes)--compress time for write-off from seven years to first buy
- At present, industry has to absorb computing expenses as part of its overhead
- Increasing difficulty of making money in the industry
- Army now has official policy that they will not facilitize unless a facility is unique to military needs

8. **Current approach of attempting to procure SAFs utilizing "build-to-print" data packages**

- Mechanical and electromechanical fuzes (as opposed to mechanical fuzes) are more amenable to the build-to-print (BTP) buying concept
- Given typical drawing package and specs, the BTP package might not even work anyway
- Currently, many fuzes are 80 percent electronic--no way to come up with BTP down to piece part level because of rapid of changes in electronics
- Government does not have the people to monitor the changes required

9. **Horrendous maze of ambiguous regulations, specifications, etc., that dictate how we conduct our business**

- Companies told how to do every aspect of the business down to titles of people, raises given
- Micromanagement of program by government
- Multiple independent audits, each reaching different conclusions

10. **Shortage of qualified suppliers**

- Very few suppliers exist who can make small gears and pinions
- Rules are now tighter about where these things can be bought
- List of qualified suppliers is getting smaller, and they often cannot really supply components needed
- Number of people that are qualified and can build SAF devices getting smaller

11. **Inability to prevent buy-ins**

- Government suffers from intentional and unintentional buy-ins
- Schedule, quality, and cost suffer and no one benefits
- Lowest bidder seems to drive everything
- Advertised buy-ins are acceptable
- On the government side, defining the "best value" is difficult, therefore they revert to cost for making decisions
- Government lawyers do not want an ambiguous argument for turning a bidder down--cannot argue with lowest price since it is black and white
- Competition In Contracting Act (CICA) allows some exceptions, but top DoD management does not exercise them
- There is a way to choose the non-lowest bid, but it requires a very elaborate process and agencies are not willing to do it--Government chooses not to exercise options

12. Refusal to conduct an end-item inventory audit by vendor vs. OEM for future acquisition decisions

- Audit of M-61 weapon system--OEM went to second source, only found one item (not produced by the OEM) that met requirements
- Buying agency cannot be convinced to use audit results in acquisition decisions
- Government agencies should buy OEM equipment until a qualified second source is available
- Competition advocate--competition is highest priority, and outcome does not have to make sense
- Competition more important than having a product that works--go with lowest bidder even if poor quality

13. Lack of awareness by program managers of complexity of SAFs

- Study on fuzing for Navy revealed that program managers (PMs) think fuzes come in flavors, are stored on the shelf, and can be picked off the shelf when needed
- A fuze design can be just as complex as the guidance system design
- Services used to have to consult the fuze community, but now authority given to PM to make decisions
- PM goes to prime contractor and says "give me a fuze," but primes do not understand fuzes
- Gunnery people will not use it if they do not understand it, even if it is in inventory--in some cases they are not even aware of the fuzes in inventory

14. NDI ethics--fuze on the shelf but not ready for production

- Non-developmental item (NDI)
- Government wants to buy qualified equipment
- Companies advertise a fuze as available for production when they are not actually capable of producing it
- Inability of government buying agencies to understand if fuze is really available for production
- Advertised item often does not meet requirements

15. Top government management has adopted an adversarial role

- CICA has some exceptions, but top management does not exercise them due to adversarial role
- If material is not perfect, contractor must have a waiver, which takes time and results in penalty, cost concession, breaches of legal concerns, and show-cause letter
- Management adopts an unrealistic role and when it fails, gets into an adversarial role
- Problem could just be an honest difference of opinion, which is not now even considered
- Restrictions on offshore electronic components--contractors have difficulty producing SAF devices if essential components are only produced offshore
- Attitude is created and fostered at the Congressional level, not just by top government

16. Inadequate communication between fuzing and munition designers

- If more attention were paid to fuzing early in design process, could have better munition systems

17. Increased role of legal function in acquisition process

- When assembling the procurement package the legal function can undo a lot of what was already done
- When problems are encountered later in the life cycle, the legal solution is used, which is not necessarily the best solution

18. Controversy between the buying and technical agencies

- The technical and buying agencies have different views and do not communicate
- Inordinate amount of time spent on waivers
- The contracting officer is the point of contact (POC) on the contract, but they don't know how to solve the technical problems--they forget there is a technical contracting officer (TCO)
- Contracting officer and TCO must work together

19. Failure to initiate SAF development early in weapon systems development

- SAF probably has longest development cycle of any subsystem

20. Continual, exhaustive audits performed by DoD agencies to assess compliance with regulations

- Many time-consuming audits, which are very susceptible to interpretation of individual auditors
- Attitude is that contractor is trying to put something over on government--auditors seek to prove it
- Government maintains very adversarial position
- This is a layered problem because company auditors are often even more severe
- Some companies have almost been put out of business by continual teams of people coming in for repeated audits
- More time spent on audits than on accomplishing the work
- Audits affect smaller companies more severely than larger companies

21. Excessive pressure on delivery schedules at the expense of everything else

- Once the contract is in place, delivery schedule drives everything
- If any problem develops, the company gets a show-cause letter, whether it is the company's problem or not
- Flushing a delinquency out of the system takes time
- Company cannot get another contract if delinquent, even if problem totally beyond its control

22. Continuing erosion of the fuze base

- Companies are going out of business and being bought up
- Government labs are competing with industry
- Fuze R&D going to the primes
- Lessens ability to supply with short reaction time

23. Unacceptable interference from the system's prime (his time and dollars) vs. the functional S&A requirements

- PM and his system analyst set up the dollars and time schedule for system
- The fuze and safing and arming devices are last in line--by the time development starts, system is already down the pike
- Often test reveals SAF device to be inadequate, but the weapon system development is so far ahead that the SAF device has to be used anyway
- PM won't allow additional time when fuze problems arise
- Lack of money and lead time leads to less than optimal time for efficient/quality development

24. Reliance upon inspection instead of problem prevention to provide quality

- Government and its policy rely on end-item inspection to determine quality
- Through Lot Acceptance Test (LAT) testing, screening out bad units
- LAT testing has risen to 40 percent of all fail
- Now tendency to put inspector on line (TQM)--raises cost but does not solve the quality problem if all he does is inspect
- Feedback loop is needed to make improvements to the process
- No system in place for examining failure points and systematically eliminating them
- Statistical process control (SPC) reduced failure rates to 1 percent in one company, but companies have to be smart in using SPC
- Companies institute SPC to show that they have it, but they don't use the results to solve the problems
- Cannot inspect in quality--problems must be identified and prevented

25. New emphasis toward separating R&D from acquisition and production

- Total quality management (TQM) and Deming's method dictate that a total team be assembled so that they all understand the problem and work on the solution
- Lab 21 will lead to R&D being further divorced from production
- Fuze companies are generally several layers beneath the PM
- Fuze design and production are becoming increasingly disconnected just when quality initiatives say they should be more closely associated

26. Decisions about fuzes are being made by primes/program managers who have not duly consulted fuze technical and production experts

- PMs do not pay attention to fuzes and do not allow proper lead times for fuze development and testing
- Fuze manufacturers are not involved until decisions already made by prime
- Primes want to avoid having to pay somebody to talk to them about the fuzes
- PMs' practices lend instability to fuze industry

27. Evolution of unrealistic government planning and contractor bidding

- PM being forced to get system fielded in a short period of time--government has unrealistic expectations
- The contractor looks at what the government is willing to spend and what the lead time is--develops unrealistic bids

28. Faulty technical data packages

- No company tries to deliver a faulty technical data package (TDP), but when one is delivered and the producer finds a problem, the fuze industry suffers
- Reproduced data cards are sometimes unreadable; the quality of replacements is equally poor
- Problems could be buried in the design concept--problems with the product can appear months after the TDP is delivered

29. Dilemma of cost/competition advocacy overriding technical judgment in establishing qualified sources

- R&D developer pressured to initiate contract
- Sometimes unqualified sources are allowed to get into the system to meet the schedule
- Causes severe problems in production

30. Lack of SAF understanding and planning by weapon system managers including prime contractors

- Movement of SAF technology into in-line fuzes causes primes to look at fuzes because of the integration of SAF devices with guidance
- Fuze base erosion accelerated by introduction of primes into fuzing

31. SAF designs not always mature

- Contracts are received where TDP may look OK, but the design is incomplete and is unbuildable
- This inhibitor is different from number 28, because the design could be mature but not accurately reflected in the TDP

32. Poor implementation of current procurement regulations

- Poor TDPs, lowest bidder complex, etc.
- Regulations may be adequate, but implementation may not be

33. Dilemma of the specification vs. the drawing package--never a marriage, always a divorce

- If built according to drawing package the product works, if built to spec it does not--difficulty resolving which is correct
- Unclear what the customer wants
- Government unwilling to fund third party to make the spec and the drawing package consistent

34. Failure to get production involved earlier in the development cycle

- Engineering change proposals (ECPs) occurring late in development process cause a big wave in the program
- Production people not consulted to determine producibility of design
- PMs like to develop items without production planning--production readiness reviews should occur during design process

35. Unstable design requirements

- Fuze design requirements shift frequently during the design and production process because people who derive the requirements change
- Programs could be canceled even after production because a new PM comes in after two years who may have different views of the requirements than the previous PM

36. Poor quality attention to detail by both designers and manufacturers

- TDPs with incomplete designs can't be manufactured
- Lack of detail results in too many waivers, ECPs
- This is more detrimental to whole program now than in the past
- Does the OEM guy or the low bidder produce more changes?
- Numbers of ECPs and waivers increasing because second sources are being used, not OEMs

37. Current procurement policies cannot handle ever-increasing complexity of SAFs

- In past, change occurred slowly, now with rapid advances in electronics, SAF devices are changing rapidly
- Procurement regulations or policies have not changed at same pace as tech changes--especially in production
- Problems especially severe in production

38. Unrealistic approach to second- and multi-source competition

- Primarily production related--unrealistic schedule for second source, time underestimated for new source to come up to speed

39. Excessive pressure on profits

- Includes all pressures that effect the bottom line (not just from the government)
- If profit climate is poor, industry has no motivation
- Companies must make a fair profit to remain in business

40. Attempting to solve social problems by issuance of rules in the RFPs

- Bids have gone from 10 pages to 150 pages
- Much of bulk results from social problems over which contractor has no control (drug-free workplace, ethics, etc.)
- Subcontracting with disadvantaged small business is almost impossible in the industry due to the small number of qualified suppliers

41. Increased bidding cost

- Increased paperwork associated with each bid

42. Arbitrary restrictions on offshore electronic components

- Critical items list established on various fuzes, includes electronic components often built offshore
- Often components made onshore are unavailable, or costs are excessive
- Government will not convince industry to return manufacturing onshore, because military is only a small market segment of business
- Military buyers will not change the electronic business, which has mostly commercial customers
- Government must find way to qualify the new supplier
- Critical item list dictates that these items be made solely in the US--goal good but not achievable in electronics industry
- Air Force buys on case-by-case basis, but their method is open to interpretation

43. Excessive use of best and final offer (BAFO)

- Rules prohibit conducting an auction
- Used to drive price down--when agency asks company for BAFO, company will lower price
- General Electric had to make five BAFOs in one six-month period

44. Fuze industry motivated by profit not quality

- Does not mean profit is a dirty word
- Prime motivator is money, not quality, in majority of contractors Navy does business with
- Deming maintains that if decisions are made motivated by quality, profit will follow
- Emphasis on profit (rather than quality) is a US problem, not just a fuze industry problem, although GE's stated goal is satisfied customer

45. Complex procurement regulations

- General perception (newspaper articles, etc.) that this is what's wrong with Defense Department
- Interpretation of regulations is difficult and varied

46. Failure to establish environmental characteristics for a given fuze

- Whole fuze community fails in this regard
- Fuze producers lack all the information for specifying and designing a fuze in advance
- Not enough time is spent collecting the needed information because getting the system fielded is a primary consideration
- Acceptance tests are often failed because the environment requirements are not known in advance

47. The decrease of overall fuzing budget

- Decrease here includes R&D dollars, unlike in inhibitor number 3
- Army hit hardest in budget cuts among Services, ammunition hit hardest in Army expenditures, fuzes hit hardest within ammunition
- Major problem for fuze industry, because it is at the very bottom of the pole, so receives the least amount of funding

48. DELETED--Depressed profits

49. Reluctance of fuze community to adopt industry/commercial acquisition practices

- Industry/commercial practices will result in quality product
- Government has difficulty trusting an individual company--wants to control process by dictating practices
- "Fuze community" as used here includes industry community as well as DoD
- Better to move toward form, fit, and function vs. BTP--government should buy to performance spec rather than data package

50. Inhibited communication of plans, requirements, and acquisition-related data from government to industry

- Government does not communicate plans, because no long range plans exist--government has no idea what will happen in the future
- Regulations put pressure on government people--not clear to them how much they can communicate to industry
- Regulations make sharing information with industry difficult--could be construed as privileged or unethical

51. Poor management by SAF producers

- Companies go out of business because of poor management, (includes developers and producers)
- Many companies now in litigation, leaving 8 billion dollars of undelivered ammunition products
- Includes poor management induced by the system--poor management does not necessarily imply poor managers

52. Mis- and micromanagement by Congress on priorities, funding, and acquisition regulations

- Congress changes priorities, mixes motivations into regulations
- Multi-year funding not allowed
- Regulations inhibit the PMs because they focus on regulations at the expense of making sound procurement decisions

53. Erosion of fuze design experience

- New, inexperienced companies are entering the industry; they do not have the discipline to create quality fuzes
- Only a handful of individuals have years of fuze design experience
- New experts are not being created
- Primes consult with inexperienced people instead of talking to the experts

54. Failure of Congress/Services to stabilize out-year budget

- Two-year budget could stabilize the budget so planning could take place
- Multi-year buys could accompany stabilized budget

55. Continued disruption of ownership of SAF suppliers

- 75-80 percent of fuze business is for sale
- Makes it difficult for government to buy fuzes

56. Reluctance of fuze community to blame itself

- Only 5 out of the first 43 inhibitors generated the first day that were caused by the fuze industry received a vote
- PMs and Congress are not included in the "fuze community" definition here

57. Poor pre-award screening at DCAS

- Problems could be prevented by proper Defense Contract Administration Service (DCAS) screening
- DCAS people operating under ignorance, are afraid to make a decision
- DCAS has responsibility but defers to technical experts

58. Poor evaluation criteria for cost and technical proposals

- Proposal evaluation unrealistic, inhibiting
- People writing proposals learn that certain things have to be said in the proposal to have it bought, regardless of its technical merit
- No motivation for innovation--no credit given for good ideas that were not required
- Proposals put out in rote fashion--evaluated for criteria having no connection with technical superiority

B. VOTING RESULTS

The results of the vote on the initial list of inhibitors are shown in Table B-1. Table B-2 shows a summary of the second vote on the inhibitors. The bold numbers are the order number of the inhibitor and next to each bold number are the ranked votes that the inhibitor received.

Table B-1. Results from First Vote on Inhibitors

1. 3, 3, 1, 3	**16.** 3	**31.**
2.	**17.**	**32.**
3. 2, 5, 2	**18.**	**33.**
4. 3, 3, 1	**19.** 3, 2	**34.**
5. 1	**20.** 4, 5	**35.** 4
6. 1	**21.** 5, 5	**36.** 3
7. 5, 4	**22.** 5	**37.**
8. 1, 5	**23.**	**38.** 5, 4
9. 3, 4, 5, 5	**24.** 4	**39.** 1
10. 3	**25.** 1	**40.** 4
11. 2, 2	**26.** 1, 1, 2, 5	**41.**
12.	**27.** 4, 4	**42.** 4
13. 1	**28.**	**43.**
14. 3	**29.** 1, 2, 2	
15. 2, 2, 2	**30.** 4	

Table B-2. Results from Second Vote on Inhibitors

1.	21.	41.
2.	22. 1, 5, 3	42. 5
3.	23.	43.
4.	24. 2, 3, 4	44. 5
5.	25.	45. 2, 1, 1
6.	26.	46. 1, 3
7.	27.	47. 2, 1, 1
8.	28. 3	48. 1
9.	29.	49. 1
10.	30. 2	50. 3, 3, 5
11.	31.	51. 5, 2, 4, 2
12.	32.	52. 5, 4, 3, 4, 2, 3
13.	33.	53. 3, 3
14. 4, 4	34.	54. 4, 5, 2, 2, 2
15.	35. 3, 5	55. 4
16. 4, 4	36. 1	56. 2, 5, 3
17.	37.	57.
18. 3	38.	58.
19.	39. 1, 1	
20.	40. 5	

Appendix C

INITIATIVES TO AMELIORATE INHIBITORS OF EFFECTIVE DoD SAF DEVICE ACQUISITION

CONTENTS

TABLES

INITIATIVES TO AMELIORATE INHIBITORS OF EFFECTIVE DOD SAF DEVICE ACQUISITION

This appendix contains the initiatives to ameliorate inhibitors of effective SAF device acquisition generated by the workshop participants, a summary of the clarifying discussion about each initiative, and the results of the vote on the initiatives. The wording of each initiative (in bold print) is that of the participant without any editing. The bullets following each initiative are major points that were captured from the discussion for clarification. Initiatives withdrawn by the authors remain in the list and are marked as deleted.

A. LIST OF INITIATIVES

60. Congress should give a clear, concise mandate to DoD on fuze system acquisition and back off from micromanaging

- Most of the complicated laws have come from the Congress
- Micromanagement is a knee-jerk reaction to scandals
- The Congress should realize regulations already exist and not add more regulations
- Interpretations of the regulations are complicated and varied

61. Exercise options with better quality producers

- The fuze industry can do this at the buying level
- Government should agree to exercise options for second year buy (not currently done)
- Companies can give option price
- Government would currently prefer to hold an auction

62. **Establish a national policy, such as a chief executive directive or initiative, to promote a climate of partnership, teamwork, and trust rather than one of adversity between government and the defense industry**

- Micromanagement approach and adversarial relationship begins at Congressional level, permeates DoD
- Necessary to start at top level to institute change and create a new environment

63. **Adopt industry/commercial practices in the development and acquisition of future SAFs**

- The credibility of entire fuze community is in question
- Fuze community must adopt a more aggressive attitude
- Change must begin within the fuze community; they must examine alternatives to way business is currently conducted
- They have no choice--must either adopt new practices or go out of business

64. **Solicit aid of SAF suppliers to define requirements during the planning phase of weapon systems**

- System should use the expertise of the SAF suppliers in terms of technical and delivery requirements

65. **Implement DoD 5000.1 (amended) as soon as possible**

- Amendment is a step in the right direction--it is attacking the massive quantities of paperwork
- Draft has been cycled through Services, but implementation still needed
- Each Service will have a single acquisition executive (civilian) to report directly to Secretary of the Service
- Represents a step toward accomplishing initiative number 62

66. **Persuade SAF-user decision makers on the importance to them of excellent fuzing and on how to get it**

- One of the problems is that the people who use the fuzes do not understand them
- The importance of good fuzes must be explained
- Must convince PMs that fuzes are worth their attention
- This is an education process, needs advocacy
- Needs action on everyone's part--adopt a problem-solving attitude

67. DELETED--Require all PMs to delegate fuze issues from program inception to PM fuze or fuze lab/center

- PMs have ignored the fuzing issues, believing fuzes are available off the shelf --they do not understand the required lead time
- Fuzes are not glamorous and are costly to develop
- Fuze development starts late--contract goes to primes, who may wait two years before going to the fuze developer
- When the fuze is not ready at the same time the prime equipment is, the fuze developer is blamed
- Fuze board involved too late in the design cycle--not the board's mission to say if a safe fuze is being made
- Many PMs like to make technical decisions that they are not qualified to make--they are not prepared to make decisions on fuze issues
- Design reviews come too late and the costs associated with making changes convince PMs to go with what they have
- Implementation required at the Service level
- The above issues are understood to be included in inhibitor number 70

68. Require contracting agencies or PMs to separately pay for each audit

- Uncontrolled number of audits without sufficient reason for them
- If the number of audits is arbitrarily restricted, problems could result
- PM could have as many audits as he chooses, as long as he pays the auditors and the contractor for the hassle
- Requirement would force PM to exercise better judgment on when to audit
- Auditors would be customer funded; audits would be performed when needed and would be thorough
- Requirement pertains to DoD audits only

69. Congress should establish a demonstration program for testing new acquisition techniques

- Congress should allow a technique to be demonstrated before all of the rules pertaining to it are put in place
- The demonstration program should encompass all techniques--not just fuze technology
- This can be accomplished, as demonstrated by the Model Laboratory Program
- Some programs should be designated as acquisition demo programs, as is being done for TQM

70. Establish a DoD policy that all munition PMs/primes must submit a written report to the Secretaries of the Services of how they consulted the in-house and industrial fuze expertise, their response, and his response, prior to any system spec release

- There exists an Army edict that system manager write up whether or not he has consulted with the fuze experts in labs or industry or if has decided to go with the prime
- Different from initiative number 67 in that PM not required to give up autonomy
- Intention that a beltway bandit not write the report
- Higher level than initiative number 67--includes all issues in initiative 67

71. Avoid buy-ins by giving strong weight to measurable capability and past performance over cost

72. Appoint or hire a fuze advocate in Congress supported by the fuze industrial base

- Fuze community has never had any political clout--other subsystems and systems do have political influence
- Use a lobbyist supported by the industrial community
- An advocate within government could also be appointed
- An organization or at least a political action committee (PAC) could be formed --the American Defense Preparedness Association (ADPA) refuses to act as lobbyist

73. **Establish a government /industry fuzing team to review the maze of regulations and spe ith the objectives of reduction, consolidation, and simplification**

- Another level of sifting appropriate for the fuze industry--extends beyond DoD 5000.1-amending activities and Defense Management Review (DMR) activities

74. **Emphasize a quality, affordable product and on-time delivery through profit incentives**

75. **DELETED--Recommend regulations be amended to permit issuance of production requirements on a yearly basis**

76. **Implement two-year budget cycle**

77. **Promote a substantial increase in the SAF tech base**

78. **Require PM fuze or his delegate to be a member of all PM source selection boards. Make minority reports**

- Source selection board should include a member of the fuze community
- Air Force, Navy does this--Army is haphazard about it
- PM autonomous and can ignore fuze if he wants to

79. **Fund tech base work out of production budgets whenever possible**

- Much of tech base work is for a future system similar to existing system
- Much more funding for production than for development
- Product Improvement Program (PIP) now requires a detected deficiency or a change

80. **Establish a fuze advocate on every weapon system development team**

- This should be done prior to source selection board activity (initiative number 78)
- Level of weapon system planners so requirements can be set
- This initiative is distinct from initiatives number 67 and 70

81. DELETED Conduct second/multi-source first article competitions during and separate from initial production runs by the OEM for TDP validation

- Having spent 12-20 years of research and development for the TDP, tendency is to put it out for bid with the presumption that the prime source who developed the TDP is able to produce from it
- Second source will also try to build from the TDP
- Give $10,000 or so to the OEM to validate the TDP, and in conjunction run a competition for qualification for second and multi source
- Exercise low-rate initial production (LRIP) with the OEM and bring in a second source through competition
- The above clarification bullets are understood to be included in initiative number 82

82. Force the developer to build LRIP so as to deliver a qualified TDP for future competition

- Assumption that developer can build to the TDP
- Developer should build the LRIP to the TDP to validate the TDP, then put out the TDP for second source to duplicate
- Ensures TDP can stand alone
- Intent is to encompass all issues in initiative number 81

83. Enforce a more rigorous screening policy to qualify bidders for given commodities

- Bidders pay for parts development--if parts test out, they will be allowed to bid
- Ask for first article, then pass first article before qualifying the bidder
- This policy would not only be applicable to spare parts
- Bidders pay for samples without guarantee of purchase
- Before government buys, bidder should be qualified

84. **Establish audit policies and procedures that emphasize constructive rather than adversarial implementation and coordinate responsibilities for all auditing activities**

- Some auditors are constructive, helpful
- Others are convinced that industry is trying to put something over on the government--these auditors are negative and destructive
- Multiple audits of the same contractor activities often result in different conclusions
- Need a way to coordinate the audits

85. **Adopt a problem solving attitude vs. a nonresponsive attitude to the solution of weapon system SAF requirements**

86. **Enforce mobilization base concepts and award contracts to these sources only, to include R&D**

- Consider families of fuzes
- Restricted, specified base that includes companies that have produced the fuze in the past
- Done in production, not in development

87. **Amend CICA to ease the roadblocks to exceptions/waivers and decentralize decision authority**

- CICA has been too restrictive--Government should have a positive attitude of entertaining waivers
- Decision authority should be brought to a lower level

88. **Promote best buy awards instead of low bidder awards**

89. **PM transfer to functional organization after successful first article test (FAT)**

- Functional organization directorates should take over after PMs
- PMs now tend to maintain authority until buy

90. **Civilianize PM structure and stop rotational assignments**

- PMs do not know what they are doing and many times do not care, because they will rotate out of the assignment before any problems arise
- Make PM position either a civilian position or a non-rotating position
- Army has created an acquisition career position to be cycled in at milestones--either the PM makes it or not at review. If not, he rotates out of the position

91. Develop a well-defined standard procurement process that meets the regulation and then be easily implemented

- Bring fuze designers together to develop standardized design process that meets the regulations

92. Change DoD's low bidder award policy to a best buy one by adopting published rational defendable award criteria that clearly separates qualified contractors from unqualified ones

- Unchallengeable method must be adopted to keep the lawyers out of the picture
- Best buy out of the qualified bidders should be selected
- Similar to initiatives number 71, 73, 83, 87, 88, and 91

93. Split out fuzes from weapon system prime contract

- Fuze requirements are covered in prime contracts, and small fuze companies never have opportunity to present innovative ideas

94. Reorganize the DCASRs, cutting back personnel at least 50 percent

- Defense Contract Administration Service, Regional (DCASR)
- Presumably, TQM will have this effect

95. Encourage an open exchange of planning data and acquisition information

- Procurement integrity directive made the technical people very reluctant to divulge lab activities to industry
- Tendency now is not to tell anybody anything
- Non-disclosure statement is legally binding

96. Establish facilitization funding policy based upon ROI

- Return on investment (ROI)

97. Impose comprehensive performance criteria requirements on any proposed NDI procurement

- Impose very demanding criteria before NDI is accepted

98. Institute multi-year buy policy

99. Promote better decision criteria of the number of production sources

- Have fewer producers than qualified bidders

100. Adopt attitude that contractors are extension of DoD. Accept appropriate waivers with appropriate concessions for best ROI

- A lot of money is spent on scrap
- How much money is already invested should be evaluated

101. Provide Congress cost information on social contracting rules on a yearly basis and funded out of separate appropriations

- DoD tells Congress how much they expect implementation of social legislation to cost them
- Cost of implementing social legislation should be identified as separate line item so Congress must address it

102. Focus on and fund problem elimination during development instead of inspection during production

103. Dictate a five/ten-year specific user munitions system requirement document that is accessible to stabilize system design requirements

- These documents were available in the past, but after procurement integrity regulations were instituted, distribution of these documents froze up
- Industry needs plan to determine what kind of fuzes the weapon systems will need 5 to 10 years in the future

104. Avoid duplication of SAF work in government laboratories

105. Eliminate turf battles within the military for control of fuzing decisions

- Problems arise when decision makers are transferred

106. For each new weapon system, establish an advisory review team consisting of personnel expert in the applicable component technologies including SAFs

107. Encourage tailoring of standards/requirements based upon individual SAF performance and life cycle requirements

- Individual SAF tailoring for a unique SAF design--select the applicable paragraphs from MIL-STD
- If sensible the standard or portion of the standard should be waived--standards should not be blindly enforced
- Tailoring partially done now, but not much--the fuze industry tends to design and produce to standards
- 1316 not applicable to all fuzes (i.e., hand emplaced hand grenades)

108. Scrutinize FARs to delete marginal/redundant regulations and emphasize positive enforcers

- Federal Acquisition Regulations (FARs) are a subset of the regulations and specs discussed in initiative number 73

109. Promote better qualification of SAF bidders

- This initiative is similar to initiative number 83

110. Reject concept to develop and place TDP on shelf. No production, no profit, no fuze base

111. Require senior level military be involved in the creative process of requirements development

- Key words are senior and creative

112. Promote a closely coordinated government/industry tech base program

113. Provide incentives to keep experienced technical personnel in government service

114. Stabilize and discipline tech base funding to satisfy emerging user needs; mission area materiel plan (MAMP) to consider total life cycle

- Tech base prioritization must be stabilized to satisfy the user needs
- Total life cycle from development into production into fielding

115. Warrant TDPs delivered by development contractors

- Once given the first order, developer will not come back to government to claim a faulty TDP
- Do not want companies to place claims against their own TDP--discussed but never enforced

116. Reduce DoD management layers

- Simple attrition being used now

117. Government simplify TDP generation process and employ statistical process control (SPC) for build-to-print contracts

- Need all the information in the TDP--government has not generated quality TDPs

118. Expand tech base funding to demonstrate mature technology to enhance technology insertion and reduce engineering development risk

- Generic inhibitor is that SAF development and production cycles are incompatible with the weapon system development cycle

B. VOTING RESULTS

The results of the vote on the initiatives are shown in Table C-3. The bold numbers are the order number of the initiative and next to each bold number are the ranked votes that the initiative received.

Table C-1. Results from Vote on Initiatives

60. 4, 3	**80.**	**100.** 2
61.	**81.**	**101.**
62. 1, 1	**82.** 4, 1, 4	**102.**
63. 1	**83.**	**103.**
64. 4	**84.** 2	**104.**
65. 2	**85.** 3	**105.**
66. 2, 1	**86.** 1	**106.** 5, 1
67.	**87.** 5, 2	**107.** 5
68. 5	**88.** 2, 4, 4, 3, 2	**108.**
69.	**89.**	**109.** 5, 4
70. 1, 1	**90.** 3, 4	**110.**
71.	**91.**	**111.**
72. 5	**92.** 5	**112.**
73.	**93.** 3, 4, 3	**113.** 2
74. 4, 3, 3, 5	**94.**	**114.**
75.	**95.** 4	**115.** 5
76. 2, 1, 4	**96.**	**116.**
77. 2	**97.**	**117.**
78	**98.** 3, 3	**118.** 2, 1, 5
79. 3	**99.**	

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