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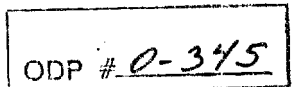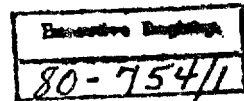
21 March 1980

MEMORANDUM FOR: Deputy Director for National Foreign Assessment
                  Deputy Director for Administration
                  Director of Data Processing

FROM: Director of Central Intelligence

SUBJECT: Concerns Regarding SAFE

1.   One of the subjects addressed at the recent Science and
Technology Advisory Panel (STAP) meeting was the SAFE system and
its implementation. Several concerns were expressed at the meeting
regarding SAFE, including the fact that there are no plans at present
to connect CIA and DIA SAFE systems so that they are mutually accessible.
I share several of the concerns expressed by the Science and Technology
Advisory Panel, and accordingly would like to meet with you to address
several of the issues that were raised by the Panel. I attach for your
information and response a list of questions and concerns prepared by
the STAP relating to SAFE. While I would appreciate your being prepared
to address all of these questions at our meeting, I personally am
especially concerned about the following:

     -- What actions are under way to ensure that the Intelligence
Community has access to CIA SAFE and that CIA SAFE has access to
DIA SAFE as well as such systems as COINS and SOLIS?

     -- How will SAFE deal with open source material?

     -- As described in some detail on page 3 of the STAP paper,
what actions are being taken to identify the real needs of the
SAFE user community and will they be satisfied by the system?

     -- How can CIA make a reasonable evaluation of the current
status of SAFE with major portions of the proposed operational
capabilities either unspecified or not communicated to the
Agency?

2.   I will schedule a meeting to discuss these issues toward the
end of next week. In the meantime, I would appreciate your responding
to all of the questions in the attached paper and providing such responses
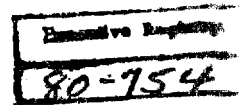to me by the middle of next week for my use in preparation for the meeting.

STATINTL

STANSFIELD TURNER

Attachment a/s

cc: DDCI
      DDS&T

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80-754

DIRECTOR OF CENTRAL INTELLIGENCE
Science and Technology Advisory Panel

18 MAR 1980

MEMORANDUM FOR: Director of Central Intelligence
Deputy Director of Central Intelligence

STATINTL FROM: ▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮

STAP Chairman

SUBJECT: Questions Regarding SAFE

   1.   In response to your request of March 14, 1980,
for comments on the current status of SAFE, I attach a
list of eight questions and brief comments that STAP
believes should be addressed.

   2.   STAP is continuing its analysis of the SAFE
problem and will prepare an options paper within the next
two weeks for your consideration.

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Attachments:
  As Stated

1.0 What steps are being taken to ensure that the Agency,
rather than the contractor is in control of the technical
aspects of the design of the system?

The geographic remoteness of the contractor, and the
lack of continuing contractor-user interaction can lead to
a situation in which the builder of the system also becomes
the architect. The absence of reciprocal technical
representation, like resident engineers, delays every
routine decision and makes larger ones unresponsive to
Agency/community needs or technological constraints. Strong
Agency technical management is absolutely essential if the
system is to satisfy real and evolving agency needs and if
it is to be integrated with other Agency and community
resources.

2.0 How is SAFE management ensuring that a final working
system has been developed from the continuing evolution of
an operationally valid pilot system? How has SAFE taken
advantage of the experience of similar, very large systems
in their:

     1) system architecture,
     2) communication and control, and
     3) changing performance requirements?

How is SAFE management ensuring that the system will:

     1) make available data on operation and usage of the
pilot system to guide development;
     2) be able to modify both system functions and
interaction capabilities so as to meet changing and evolving
requirements; and
     3) be able to add new functions and interactions so as
to meet new requirements?

     Relevant Experience -- It is well agreed that an
information handling system cannot be achieved by a simple
Design-Build-Use cycle, no matter how brillant the design
or faithful the building. Consider three (out of many)
currently operating very large nets with requirements at
least comparable in size and complexity with the Agency/
community's:

     1) the ARPA net,
     2) the airlines reservation system, and
     3) the IBM in-house computing net.

All of these systems evolved - that is, they started
as soon as possible with operating pilot systems, so that
there was always an operational evaluation of effectiveness.
Furthermore, in each case, a primary purpose of the original
plans was drastically altered as experience was gained. Even
so, developments in concept, hardware, software, and practice
are continuing now in greater volume than ever.

2.1 The ARPA Net

The ARPA net was originally conceived by ███████████   STATINTL
at the ARPA IPO (Information Processing Office) as a means
of netting research computers in order to do distributed
computing. The message facility was then a minor function.
As message usage rose, packet switching became a powerful
tool with wide application elsewhere in the technology. The
separate centers in the ARPA net have much independence,
subject to some fairly strict requirements for communications
protocols and access. This allows competitive development
and a common evaluation of new technological developments -
e.g., the intelligent terminal is being subjected to widespread
experimentation and development.

2.2 Airlines Reservation System

The first automated electronic airfare reservations and
ticketing systems were disasters - e.g., SABER, the
American Airlines/IBM effort was predesigned and built to
an apparently reasonable set of specifications that turned
out not at all to match the operational needs. The first
successful ones were ad hoc temporary devices (e.g., UNITED)
that worked just well enough to be improved.

Note that the requirement for fast and accurate inter-
line communications, backed up by automatic commitments for
seats and equipment was a much later development; it is, however,
by now one of the most valuable and cost-effective facilities.

2.3 The IBM In-House Computing Net

Virtually all the on-line computers at IBM company
installations world-wide are netted together by communication

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facilities, making them, we believe, the largest net in
the world. Admirable new functions exhibited by their
systems are:

      1) a modifiable macro command language,
      2) a consistent, speedy and flexible data transmission/
translation scheme.

3.0 The SAFE user community consists of Intelligence
Community analysts covering the full spectrum of research
into foreign political, military, economic, scientific,
and technological activity. Their effective use of this
system and, ultimately, the quality of intelligence they
produce rest on whether their real needs can be identified
and satisfied by the system. To that end, what actions
will be taken to ensure that:

      1) all elements of the intended user community
are actually involved in the system's continuing development,

      2) the broadest of the present analytical requirements
are identified,

      3) these present requirements can be validated by a
consistent method,

      4) the validated present requirements will be met,

      5) modifications and new requirements can be accepted
as they are identified,

      6) all analytical users will acquire the necessary
skills and familiarization with SAFE on an interim basis so
they are ready to begin broad utilization when system IOC is
reached,

      7) this interim SAFE test-phase acquires continuing
comprehensive experimental data on user experience with the
system, and

      8) the acquired data on user experience is actually
utilized in the architecture and development of the system?

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4.0 How can the Agency make a reasonable evaluation of the current status of SAFE with major portions of the proposed operational capabilities either unspecified or uncommunicated to the Agency? For example,

      1) the user command language and its parsing,
      2) the user programming languages,
      3) the user editing languages, and
      4) procedures for backup, including regeneration of derived files lost in crashes.

    Note the above have to be prototypes capable of continuing responsive evolution, rather than final imposed prescriptions.

5.0 What actions are under way to insure that the Intelligence Community has access to CIA SAFE and that CIA SAFE has access to DIA SAFE as well as such systems as COINS and SOLIS?

    The absence of appropriate linkages with other IC systems makes it highly probable that duplicate facilities and files will be acquired and constructed with higher costs and lessened capability for the total IC system. Provisions for such linkages should be built into SAFE from the start, otherwise it will be difficult if not impossible to backfit these linkages.

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6.0 How will SAFE deal with open source material? Will ███ material, either finished publications or field reporting, be made available to the analyst through SAFE? How will SAFE deal with current newspaper and journal entries?

    Several of the offices that will use SAFE, in particular OPA and OSWR, make extensive use of open source material. Their analytical efforts will be seriously hampered if their files do not include open source materials.

7.0 What steps are being taken to ensure that SAFE will be designed to allow collaborative usage?

    Examination of other similar systems, such as Stanford University's SUMEX system or the internal IBM system, shows

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that user-to-user interactions comprise a significant
fraction of the total use of these systems and greatly
enhance the overall analytical capability of its users.

8.0 What steps are under way to ensure that in the
procurement of major hardware items, these items will be
compatible with existing Agency systems?

The Agency has made very substantial investment in
ADP equipment that currently serves a wide variety of
users. This investment should be capitalized on in order
to enhance the future capabilities and particularly the
flexibility of SAFE. If the interoperability of SAFE and
existing ODP hardware is going to be dependent on software,
then provisions should be made:

1) for the development of the needed software since
it will be a major undertaking; and

2) for the establishment of evolving standards and
protocols for interconnection.

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