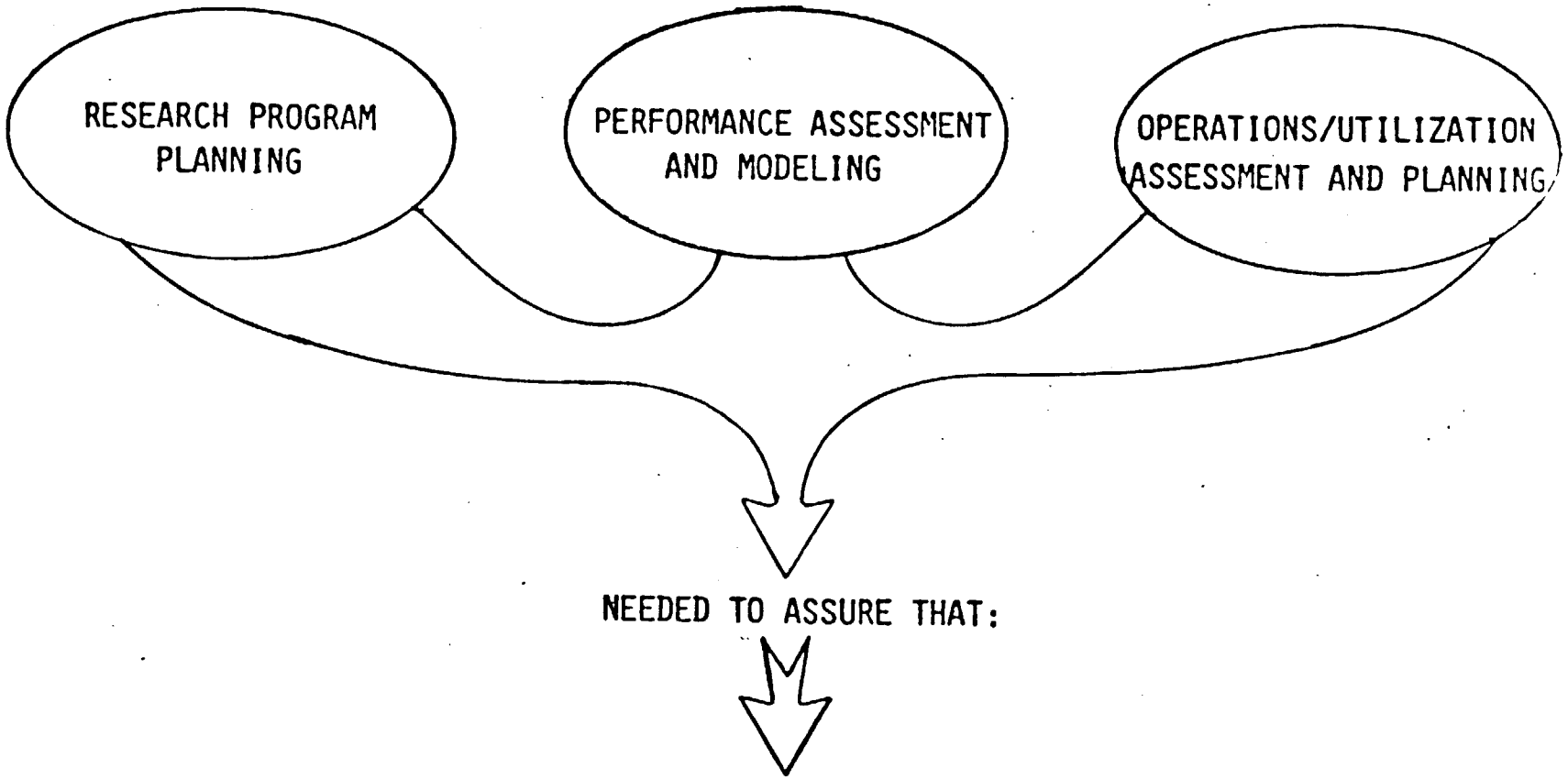
AWT MODELING STATUS

JOHN M. ABBOTT

DEPUTY MANAGER, AWT RESEARCH OFFICE

NASA LEWIS RESEARCH CENTER

AERO DIRECTORATE AWT ACTIVITIES



- o SUITABLE AWT PERFORMANCE CAPABILITIES DEFINED
- o SOUND AWT DESIGN ESTABLISHED

AWT PERFORMANCE ASSESSMENT AND MODELING

OBJECTIVES:
- DEVELOP A TECHNICALLY SOUND AWT DESIGN THROUGH ANALYTICAL AND PHYSICAL PERFORMANCE ASSESSMENT AND MODELING
- ADVISE THE AWT PROJECT OFFICE ON CONTRACTED DESIGN ACTIVITIES

APPROACH:
- LEARN FROM OTHERS WHO HAVE RECENT MODELING EXPERIENCE
  - VISITS FOR TECHNICAL DISCUSSIONS
  - SEMINAR ON WIND TUNNEL MODELING
- CONDUCT MODELING AND PERFORMANCE ASSESSMENT ACTIVITIES WITHIN THE AERONAUTICS DIRECTORATE
  - AD HOC AWT PERFORMANCE WORKING GROUP
  - PERFORMANCE ASSESSMENT AND MODELING TASK FORCE

AD HOC AWT PERFORMANCE WORKING GROUP

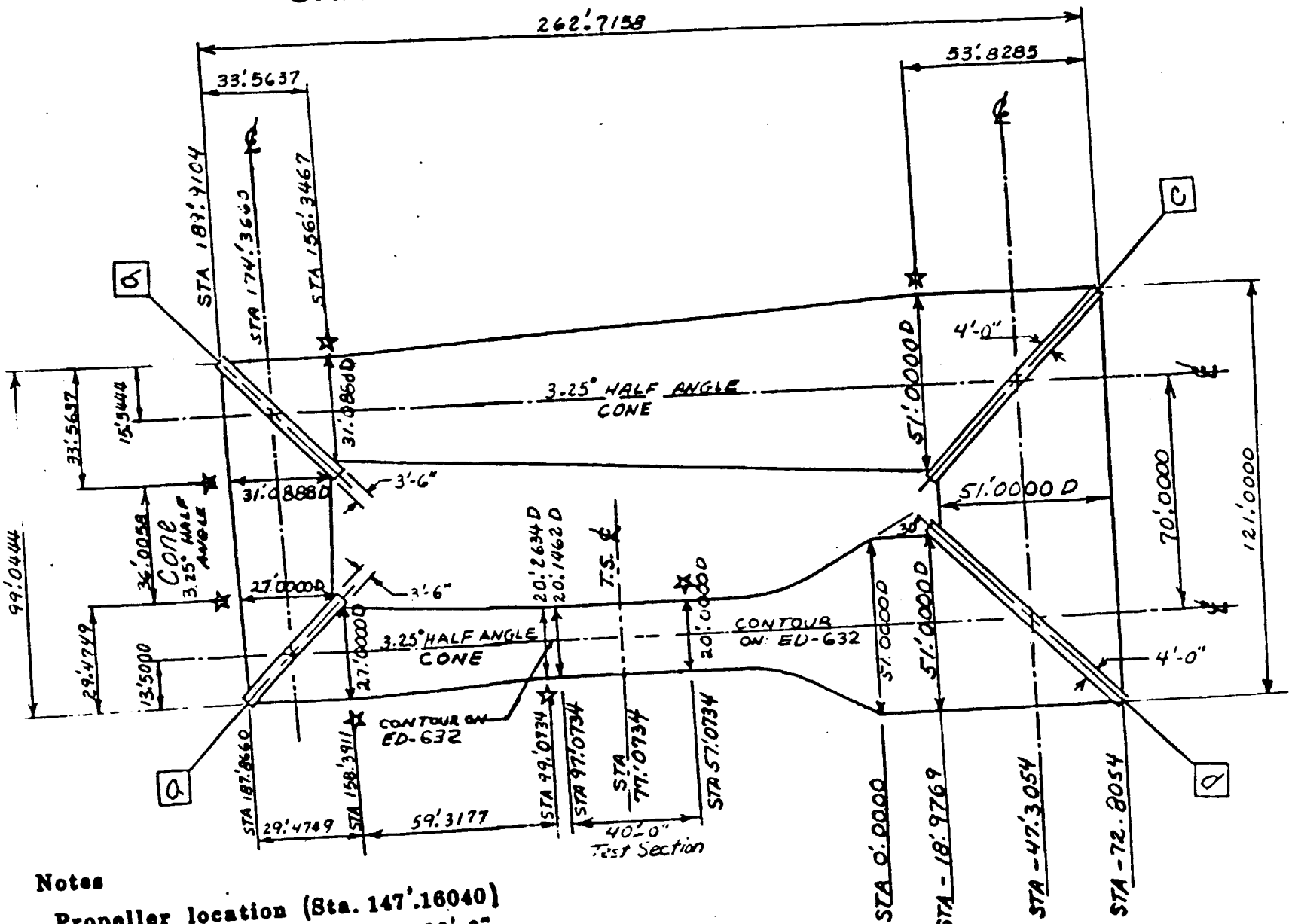
OBJECTIVE:

- PULL TOGETHER A DATA PACKAGE OF INFORMATION ON AWT THAT INCLUDES:
  - CIRCUIT DIMENSIONS
  - CIRCUIT AREA DISTRIBUTION
  - CIRCUIT 1-D FLOW CHARACTERISTICS (M, P, R_E, ETC.)

STATUS:

- GROUP ESTABLISHED JANUARY 13 (4 MEMBERS)
- GEOMETRIC CHARACTERIZATION COMPLETE. PHYSICAL DIMENSIONS OF TUNNEL BEING VERIFIED
- DETAILED LOOK AT COMPONENT LOSS MODELS NOW UNDERWAY - NEEDED TO DETERMINE 1-D FLOW CHARACTERISTICS
- GROUP FUNCTION HAS BEEN ABSORBED INTO CIRCUIT AEROTHERMODYNAMICS TASK TEAM

ORIGINAL A.W.T. GEOMETRIC DIMENSIONS



Notes

Propeller location (Sta. 147'.16040)
Clear opening of T.S. door 86'-0"
☆ represents beginning or end of conic section
All linear dimensions taken from prints

Source: NACA Dwgs. ED-602, EX-603, ED-632 & ED-685

1-30-84 HEN DEN DRB

AWT PERFORMANCE ASSESSMENT AND MODELING TASK FORCE

OBJECTIVE:

- ESTABLISH AND IMPLEMENT AN AWT PERFORMANCE ASSESSMENT AND MODELING PLAN TO ENSURE THE TECHNICAL SOUNDNESS OF THE AWT PROJECT
  - ANALYTICAL MODELING REQUIREMENTS
  - PHYSICAL MODELING REQUIREMENTS (INCLUDING FACILITIES)
  - RESOURCE REQUIREMENTS ($'S, MY'S)
  - SCHEDULE

APPROACH:

- CONDUCT MODELING AND PERFORMANCE ASSESSMENT ACTIVITIES WITHIN THE AERONAUTICS DIRECTORATE VIA FIVE TASK TEAMS LED BY SECTION HEADS WITH THE APPROPRIATE BACKGROUND

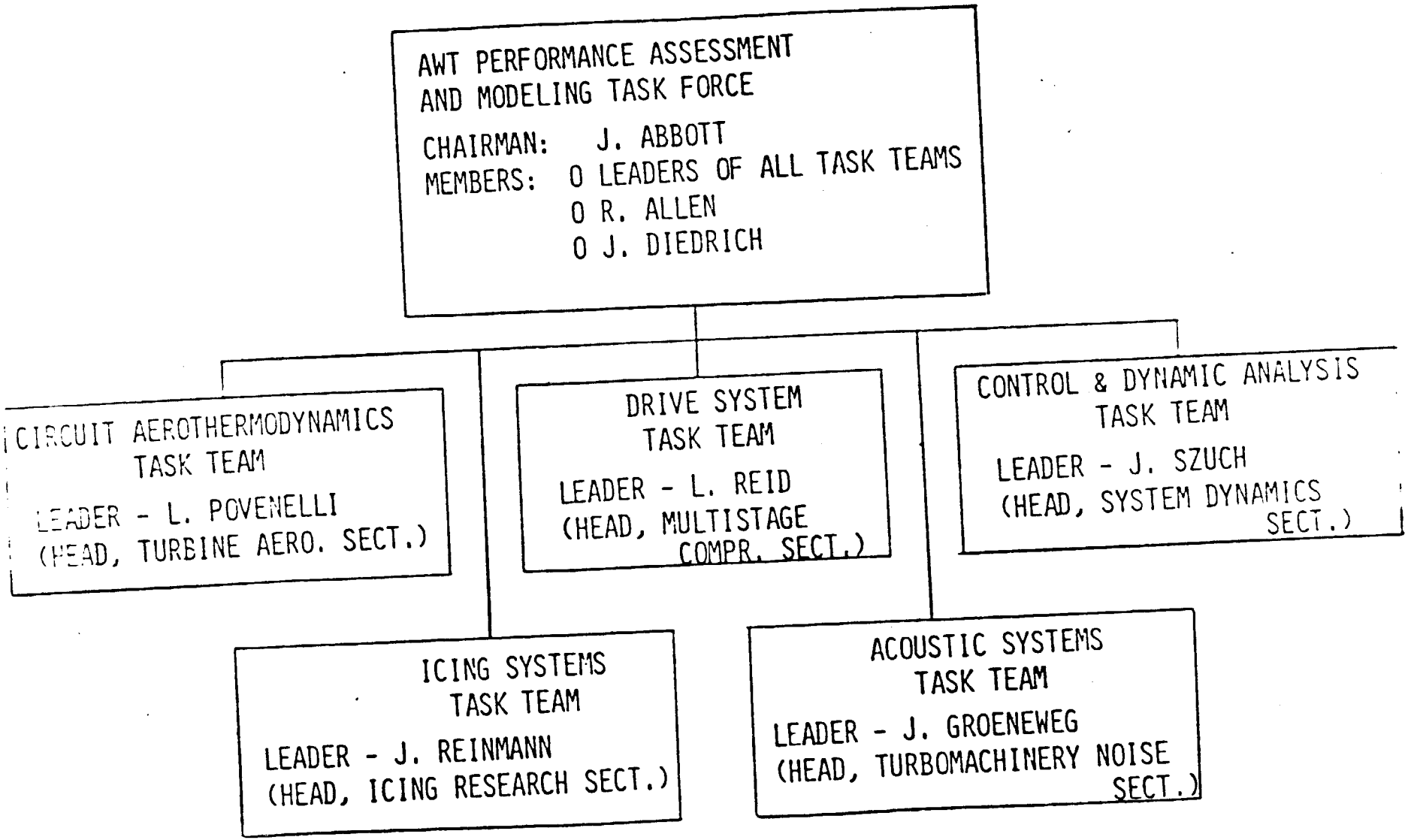
STATUS:

- KICKOFF MEETING - JANUARY 27
- IDENTIFYING NEEDS FOR PERFORMANCE ASSESSMENT AND MODELING

NASA

AWT ALTITUDE WIND TUNNEL

ORGANIZATION FOR AWT PERFORMANCE ASSESSMENT AND MODELING



ISSUES/QUESTIONS BEING ADDRESSED BY TASK TEAMS

- ASSESS CURRENT ANALYTICAL CAPABILITIES; DETERMINE ADDITIONAL NEEDS; DEVELOP NEW CAPABILITIES.
- WHAT, AND HOW MUCH, NEEDS TO BE PHYSICALLY MODELED?
- WHAT SIZE SHOULD THE PHYSICAL MODELS BE?
- IN WHAT FACILITIES SHOULD THE MODELS BE TESTED? PERMANENCE IS AN ISSUE.
- AT WHAT CONDITIONS WILL THE MODELS BE TESTED? P, T, H, Re, ETC.
- WHAT INSTRUMENTATION IS REQUIRED?
- WHAT ARE RESOURCE REQUIREMENTS? #'S? MY's?
- WHAT IS THE SCHEDULE OF ACTIVITIES?

SCHEDULE OF PERFORMANCE ASSESSMENT AND MODELING ACTIVITIES