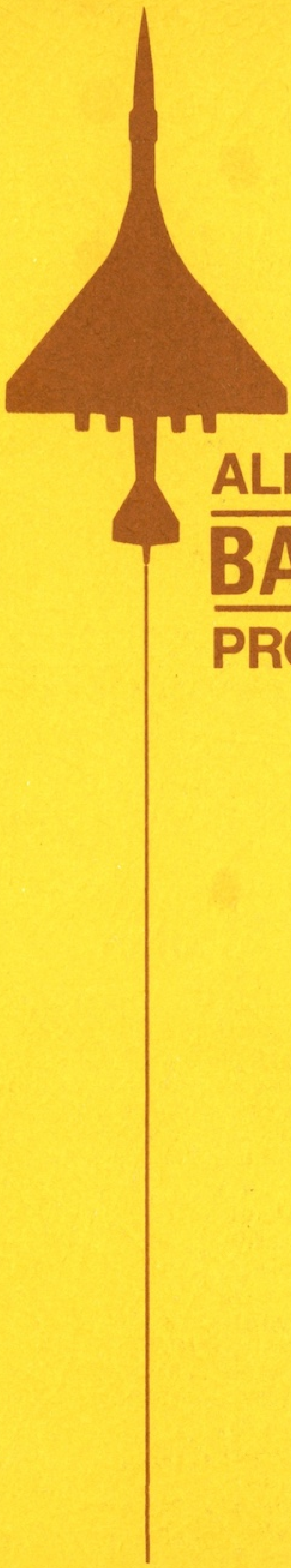

ALPA'S

BACK THE SST

PROGRAM

INFORMATION KIT

Q & A No. 1

QUESTION: <u>WILL THE CONTROL TECHNIQUES OF AN SST BE BEYOND THE CAPABILITIES OF AN AIRLINE PILOT WHO HAS BEEN TRAINED AND QUALIFIED IN SUBSONIC JETS?</u>

ANSWER: No. To assure pilot workloads are to be maintained below the limit of known human capacities, the supersonic transport must possess flying qualities equal to or superior to those found in today's subsonic jet airplanes. The importance of this objective is emphasized when the size, weight, speed, and altitude of the SST are considered. Aircraft response to pilot control inputs must be positive, accurate and continually predictable throughout the flight profile.

To improve flying qualities and reduce pilot workload, the SST will utilize four separate, independent stability augmentation systems. Each system is capable of independently performing its function, therefore, the four systems provide quadri-redundancy to assure increased reliability and fail-safe operation. This distinctive feature is also incorporated in the flight control and all-weather landing systems.

Subsonic operations of SST flight, including takeoff and landing phases, will be very much like that of today's subsonic jets. Power reserves will provide numerous side benefits.

Q & A No. 2

QUESTION: HOW WILL CLEAR AIR TURBULENCE (CAT) AFFECT THE SST?

ANSWER: In cruising flight, the SST is expected to encounter fewer and weaker gusts than today's airline transports. Data published by NASA show that the probability of encountering turbulence at SST cruise altitudes (60,000-70,000 feet) is only one-third that of today's cruise altitudes (30,000-40,000 feet). Also fortunately, at 60,000 feet the average strength of gusts is one-half that at 30,000 feet and only one-third that at low altitudes (such as 5,000 feet). Research indicates that, at cruise altitudes, the SST will encounter fewer gusts, the gusts will be weaker. This means a smoother ride for passengers because the airplane will fly through gusty regions more quickly.

Important nationally coordinated effort is directed towards the development of new methods to provide improved instrumentation that will enable pilots to cope more easily with atmospheric turbulence. In addition, cockpit instrumentation and aircraft automatic stability control systems for the SST will represent an appreciable advance in state-of-the-art applications of technology for the purpose of improving ride comfort in turbulence. These new advances will be used to provide as safe and as comfortable a ride as today's subsonic jets.

Q & A No. 3

QUESTION: WHAT WILL THE SST DO WHEN LOW VISIBILITY WEATHER CONDITIONS AT TERMINAL AIRPORTS IMPOSE OPERATIONAL LIMITS ON COMMERCIAL AIRCRAFT?

ANSWER: The SST will be equipped with a fully automatic landing system that, under zero visibility conditions, can fly the airplane throughout the approach to the airport and even land at a predetermined point on the runway. System redundancy will provide a fail-safe operational feature. The system constantly monitors both the airborne and ground-based equipment and signals any malfunction to the pilot. The pilot retains both the prerogative and the capability of taking over manual control of the aircraft at any time and of either continuing the approach or executing a go-around if necessary. Same as today.

Q & A No. 4

QUESTION: AT SST CRUISE ALTITUDES, WHAT WILL HAPPEN IF THERE IS A LOSS OF CABIN PRESSURE?

ANSWER: Maintaining control of the cabin pressure to assure passenger safety during normal and failure conditions is a prime design requirement of the SST. Considerable engineering development in the form of analyses and tests have been conducted at the airplane contractor's facilities and at FAA to insure the design of a safe and reliable cabin pressurization system. While the SST cruise altitudes will be higher than the present subsonic commercial jet airplanes, the SST cabin pressure altitude will be essentially the same as subsonic jets. In the event of a pressurized hull failure resulting from an engine failure, window or door seal leaks, safe emergency pressurization control is provided by pumping more air into the cabin to maintain cabin pressure within the Federal Aviation Regulations and the Tentative Airworthiness Standards for Supersonic Transports (FAR & TAS 25.841) requirements.

Pressurization limits have been established for an SST by aeromedical experts and have been validated in physiological studies at the Civil Aeromedical Institute. These limits are:

LIMIT I: Nine minutes at 15,000 feet, with a return to 8,000 feet in the 10th minute (no passenger oxygen).

LIMIT II: Seven minutes at 25,000 feet, with a return to 8,000 feet by the 10th minute (passenger oxygen for all).

LIMIT III: One minute at 25,000 feet, with a return to 8,000 feet by the 6th minute (no passenger oxygen).

LIMIT IV: One minute at 37,000 feet with uniform return to 8,000 feet by the 10th minute (passenger oxygen for all).

In the case where the cabin begins to lose pressurization, the situation will be alleviated by descending to a lower altitude. An SST will be required to comply with all the safety standards regarding pressurized cabins prior to its entry into commercial service.

Q & A No. 5

QUESTION: WILL THE AVERAGE AIRLINE PILOT BE ABLE TO OPERATE SAFELY HIS VERY LARGE 300-PASSENGER AIRPLANE FLYING AT NEARLY THREE TIMES THE SPEED OF SOUND?

ANSWER: The SST will have many electronic features to augment the pilot in handling and controlling the airplane. These augmenting features will give the pilot the ability to control the airplane even more precisely than today's less-sophisticated jets and probably with less difficulty.

All critical systems are quadri-redundant--that is four separate independent systems perform the same function to provide fail-safe operation. The aircraft is capable of being safely operated with only two of the four systems functioning.

Pilot visibility for takeoff and landing is better than that now available to the airline pilot in present day transports by virtue of the movable nose areas of the aircraft. The takeoff and landing speeds for the supersonic transport are in about the same range as those now required for the large subsonic jets.

The pilot will have more sensitive and otherwise generally improved flight instruments as compared with those in today's aircraft, thus, further enhancing safe operation of the aircraft.

Q & A No. 6

QUESTION: WILL THE SST ACCELERATIONS AND G LOADS BE DIFFERENT THAN IN TODAY'S JETS?

ANSWER: The SST's acceleration environment will not be noticeably different from the acceleration environment of today's aircraft. For example, the typical acceleration during takeoff in the SST will be 8 feet per second per second as compared to 7.2 feet per second per second in the Boeing 737 at maximum takeoff weight. Turning accelerations are determined by bank angle and are the same regardless of speed for the same bank angle in the coordinated turning maneuvers used by pilots. Passengers in the SST will be no more aware of turning maneuvers than they are in today's transport aircraft.

Q & A No. 7

QUESTION: WILL THE SST BE SAFE?

ANSWER: From the earliest conceptual stages of the U. S. Supersonic Transport Development Program, the objective has been to develop a supersonic transport that is safe for its occupants, superior to any other commercial aircraft and economically profitable to build and operate. Safety has evolved as the overriding fundamental objective of the entire program. The Request for Proposal for Phase III of the SST development program made this fact quite clear in the statement that, "the objective of safety will not be compromised to any degree to achieve any other objective."

Therefore, the Office of Supersonic Transport Development required the implementation of a formal and scientific system safety management program on the part of the manufacturer. Specific safety guidance material and evaluation criteria are being applied to induce maximum emphasis and attention by all contractors and subcontractors throughout the design, development, flight test and production of the SST.

Many of the features of the SST tend to make it inherently more safe. The SST structures, largely of titanium, are inherently more fire and crash resistant, automatic flight control system with fail-safe redundancy, improved instrumentation, inertial navigation and superior avionics will reduce the pilot workload for the SST crew member. The high-thrust engines provide more power for takeoff; more power is available to cope with emergencies such as failure of one or more engines.

Q & A No. 8

QUESTION: WHAT ARE THE OCCUPANTS CHANCES FOR SURVIVAL IN THE EVENT OF A CRASH LANDING?

ANSWER: Design features that have improved survival chances in the subsonic jet era are being further improved in the SST. Titanium alloys will be used extensively in SST construction. These alloys have properties of increased strength and toughness and are much more heat and fire resistant than conventional airplane construction materials. In addition, heat resistant glass and high heat treated steels will be used where appropriate to provide extra strength and protection.

Ultimately, safety in the SST will be assured by the Flight Standards Service of FAA. This service is responsible for the development and promulgation of the Federal Aviation Regulations that establish the SST airworthiness and operating standards. These standards are safety standards. They govern the manufacturers' airplane design and construction, with respect to safety; and, they establish the manner in which the SST will be operated with respect to safety.

We are confident that the safety problems have been well defined and satisfactory solutions are well within today's technology and state-of-the-art. Nevertheless, continual emphasis will be placed on a search for hidden problems and the application of better solutions, taking full advantage of technological advances and improvements in the state-of-the-art.

Q & A No. 9

QUESTION: AIRPORTS AND AIRWAYS ARE CROWDED NOW--WON'T THE ADVENT OF THE SST AGGRAVATE THESE PROBLEMS?

ANSWER: It is true that our airports are crowded. In fact, a major expansion of airport facilities is required during the next eight years just to keep up with the tremendous increase in air travel that is forecast. This problem is not just one of runway and air traffic facilities but is a total airport problem: ground transportation, roads, parking facilities, ticket counters, baggage handling, ramp space, etc. The federal government, in conjunction with major metropolitan areas, is attempting to prepare for this increased air traffic by planning and initiating expansion of these facilities.

The SST will actually help alleviate the congestion. With its short flight times (2 hours 30 minutes New York to London), it will tend to eliminate the peak traffic hours at international gateways by spreading departures and arrivals throughout the day. An SST on the New York-London shuttle can easily make four one-way trips in a day. It will also be quite feasible for a businessman to cross the Atlantic, conduct his business, and return home the same day.

Q & A No. 10

QUESTION: WILL THE SST BE ABLE TO OPERATE SAFELY FROM TODAY'S AIRPORTS OR EVEN THOSE PLANNED FOR THE 1975 TIME PERIOD?

ANSWER: The SST design features a fixed delta wing and a separate horizontal and vertical tail. This permits the use of high-lift devices on both the leading and trailing edges of the wing. These devices provide better low-speed handling qualities and reduce takeoff and landing speeds and distances. Taking advantage of these devices, the SST will take off and land at speeds and distance requirements comparable to those of large present day inter-continental subsonic jet airplanes. It will operate efficiently from large jet terminal facilities.

The SST engines are sized for transonic acceleration as opposed to sub-sonics, which traditionally have been sized for takeoff and second-segment climb.

In addition, the SST engines develop much more power with respect to the airplane weight than do today's subsonic jet engines. This means safer take-off performance and provides a greater margin of safety and control in the event of engine failure during takeoff.

Q & A No. 11

QUESTION: FROM A PILOT'S VIEWPOINT, WILL THE SST BE AS SAFE AS THE CURRENT SUBSONIC JET AIRPLANES?

ANSWER: There is every reason to believe the SST will be the safest transport airplane ever introduced into commercial service. There are two major reasons for this belief. First, the SST has been and will continue to be designed, developed and tested under a management system that incorporates a strong, aggressive system safety engineering program. Under this concept, specially trained safety engineers are grouped together, not to design the airplane or to relieve the design engineers of their inherent responsibility for safety, but to provide specialized support, assistance and knowledge to the engineering design groups. These engineers, experts in the field of aviation safety and employing the latest scientific principles and techniques, constantly probe, review, analyze, offer constructive criticism and make recommendations to minimize the technical safety hazards of the total system.

Secondly, the SST will be certificated for passenger service only after compliance with the safety requirements of the Federal Aviation Regulations has been adequately demonstrated. In addition, the airlines and organizations such as ALPA, the Air Transport Association, as well as others, make a significant contribution because of their economic and intense personal interest in safety.

Q & A No. 12

QUESTION: WON'T IT BE MORE HAZARDOUS AT SUPERSONIC SPEEDS WITH REGARD TO MID-AIR COLLISIONS WITH OTHER AIRCRAFT?

ANSWER: Primarily the SST will cruise at 60,000 to 70,000 feet, well above today's congested airways. At supersonic speeds and altitudes (60,000-70,000 feet vs. 30,000-40,000 feet subsonic jets) air traffic control will provide adequate margins of altitude and speed separation through precise flight schedule control. Where ground-based radar can track the traffic, more positive control can be exercised. Also, airborne instruments to provide the pilot with warning of possible collisions are being investigated for use in all aircraft. In the SST, provisions are made for inclusion of such instruments.

Q & A No. 13

QUESTION: WILL HAIL OR RAIN ENCOUNTERED AT SUPERSONIC SPEEDS DAMAGE THE SST?

ANSWER: The size of hailstones and the frequency of hail conditions is known to decrease with increasing flight altitudes to a degree that very few, if any, exist at SST cruise altitudes. The dimension of storm clouds containing hail also decrease with increasing altitude and the clouds are more easily detected and avoided. Completely unavoidable hail conditions may not exist at SST cruise altitudes. The improved weather radars to be used on these aircraft will provide enhanced capability to avoid hail and rain clouds at the high altitudes associated with supersonic flight.

FAA tentative standards for the SST require that the SST be designed to withstand hail and rain encounters. The acceptable means of compliance require demonstration that one-inch hailstones produce no indentation and that two-inch hailstones produce no appreciable damage at speeds as high as those associated with Mach cruise at 40,000-foot altitudes. Tests must be conducted with four-inch hail, and encounters at 50,000-foot cruise Mach numbers must not indicate chances of catastrophic failure. FAA standards clearly require demonstration that even the most extreme hail environments will not result in catastrophic failure. New materials to be used in the construction of the U. S. SST design provide greatly enhanced capability to resist impact damage due to rain and hail.

Q & A No. 14

QUESTION: HOW LONG WILL THE GROUND CREW HAVE TO WAIT BEFORE THE AIRPLANE CAN BE SERVICED BECAUSE OF THE HOT SKIN RESULTING FROM SUPERSONIC FLIGHT, AND WILL THIS NOT LIMIT THE TURNAROUND CAPABILITY AND ULTIMATE EFFICIENCY OF THE AIRPLANE?

ANSWER: As per experience with the XB-70 and YF-12/SR-71 airplanes, the skin of the airplane will have cooled enough during the relatively slow letdown and landing phases of flight that touching this skin upon landing will merely be warm to the touch.

Q & A No. 15

QUESTION: IN THE EVENT OF AN AIR-CONDITIONING SYSTEM FAILURE, WOULD NOT COCKPIT TEMPERATURES BE SO HIGH THE CREW COULD NOT FUNCTION?

ANSWER: Normal cabin air temperature in the SST will be approximately 70°F with the same range of adjustment for comfort, (65°F to 85°F) as in today's aircraft. Due to insulation and the flow of air-conditioned air between the outer skin of the fuselage and the interior wall of the aircraft, cabin wall temperatures will normally be no warmer than 85°F.

The SST air-conditioning system is designed to insure that cabin air temperatures can be maintained below 90°F under any emergency condition that could conceivably occur. Even in the most remote circumstances, the system will maintain cabin air temperatures well below the levels that might affect crew performance. There are four systems provided, any one of which will provide safe levels of air-conditioning.

Q & A No. 16

QUESTION: WHAT ABOUT PILOT VISIBILITY FROM THE FLIGHT DECK? WILL IT BE BETTER OR WORSE THAN THAT OF TODAY'S JETS?

ANSWER: The SST will feature a "droop snoot" to improve pilot visibility on landing. This movable nose section drops down to provide excellent line of sight for pilots on landing and is considered better than today's jets.

Q & A No. 17

QUESTION: WILL COCKPIT INSTRUMENTS BE THE SAME AS IN TODAY'S JETS?

ANSWER: Probably not. A new generation of improved flight instruments is now in the development stage and will be incorporated in the SST cockpit design. Pilots through the various ALPA committees will have a lot to say about this even before the two prototypes are flying.

Q & A No. 18

QUESTION: WILL THE SST IMPOSE GREATER FLIGHT DECK WORKLOADS ON THE CREW?

ANSWER: No. In fact, improved instrumentation, inertial navigation and superior avionics will reduce the pilot workload for the SST crew member. The high-thrust engines provide more power for takeoff, and more power is available to cope with emergencies such as failure of one or more engines.

To improve flying qualities and reduce pilot workload, the SST will use four separate, independent stability augmentation systems. Each system is capable of independently performing its function, therefore, the four systems provide quadri-redundancy to assure increased reliability and fail-safe operation. This distinctive feature is also incorporated in the flight control and all-weather landing systems.

AIR LINE PILOTS ASSOCIATION
Washington, D.C. 20004

The 92nd Congress

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Fact Sheet #17

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11. Joseph G. Minish (D)
12. Florence P. Dwyer (R)
13. Cornelius E. Gallagher (D)
14. Dominick V. Daniels (D)
15. Edward J. Patten (D)

NEW MEXICO

Senators
Clinton P. Anderson (D)
Joseph M. Montoya (D)

Representatives
1. Manuel Lujan, Jr. (R)
2. Howard Lowell Runnels (D)

NEW YORK

Senators
Jacob K. Javits (R)
James L. Buckley (C)

Representatives
1. Otis G. Pike (D)
2. James R. Grover, Jr. (R)
3. Lester L. Wolff (D)
4. John W. Wydler (R)
5. Norman F. Lent (R)
6. Seymour Halpern (R)
7. Joseph P. Addabbo (D)
8. Benjamin S. Rosenthal (D)
9. James J. Delaney (D)
10. Emanuel Celler (D)
11. Frank J. Brasco (D)
12. Shirley Chisholm (D)
13. Bertram L. Podell (D)
14. John J. Rooney (D)
15. Hugh L. Carey (D)
16. John M. Murphy (D)
17. Edward I. Koch (D)
18. Charles B. Rangel (D)
19. Bella S. Abzug (D)
20. William F. Ryan (D)
21. Herman Badillo (D)
22. James E. Scheuer (D)
23. Jonathan B. Bingham (D)
24. Mario Biaggi (D)
25. Peter A. Peyser (R)
26. Ogden R. Reid (R)
27. John G. Dow (D)
28. Hamilton Fish, Jr. (R)
29. Samuel S. Stratton (D)
30. Carleton J. King (R)
31. Robert C. McEwen (R)
32. Alexander Pirnie (R)
33. Howard W. Robison (R)
34. John H. Terry (R)
35. James M. Hanley (D)
36. Frank Horton (R)
37. Barber B. Conable, Jr. (R)
38. James F. Hastings (R)
39. Jack F. Kemp (R)
40. Henry P. Smith III (R)
41. Thaddeus J. Dulski (D)

NORTH CAROLINA

Senators
Sam J. Ervin, Jr. (D)
B. Everett Jordan (D)

Representatives
1. Walter B. Jones (D)
2. L. H. Fountain (D)
3. David N. Henderson (D)
4. Nick Galifianakis (D)
5. Wilmer Mizell (R)
6. Richardson Preyer (D)
7. Alton Lennon (D)
8. Earl B. Ruth (R)
9. Charles R. Jonas (R)
10. James T. Broyhill (R)
11. Roy A. Taylor (D)

NORTH DAKOTA

Senators
Milton R. Young (R)
Quentin Burdick (D)

Representatives
1. Mark Andrews (R)
2. Arthur A. Link (D)

OHIO

Senators
Robert Taft, Jr. (R)
William B. Saxbe (R)

Representatives
1. William J. Keating (R)
2. Donald D. Clancy (R)
3. Charles W. Whalen, Jr. (R)
4. William M. McCulloch (R)
5. Delbert L. Latta (R)
6. William H. Harsha (R)
7. Clarence J. Brown, Jr. (R)
8. Jackson E. Betts (R)
9. Thomas L. Ashley (D)
10. Clarence E. Miller (R)
11. J. William Stanton (R)
12. Samuel L. Devine (R)
13. Charles A. Mosher (R)
14. John F. Seiberling, Jr. (D)
15. Chalmers P. Wylie (R)
16. Frank T. Bow (R)
17. John M. Ashbrook (R)
18. Wayne L. Hays (D)
19. Charles J. Carney (D)
20. James V. Stanton (D)
21. Louis Stokes (D)
22. Charles A. Vanik (D)
23. William E. Minshall (R)
24. Walter E. Powell (R)

OKLAHOMA

Senators
Fred R. Harris (D)
Henry Bellmon (R)

Representatives
1. Page Belcher (R)
2. Ed Edmondson (D)
3. Carl Albert (D)
4. Tom Steed (D)
5. John Jarman (D)
6. J. N. Happy Camp (R)

OREGON

Senators
Mark O. Hatfield (R)
Robert W. Packwood (R)

Representatives
1. Wendell Wyatt (R)
2. Al Ullman (D)
3. Edith Green (D)
4. John Dellenback (R)

PENNSYLVANIA

Senators
Hugh Scott (R)
Richard S. Schweiker (R)

Representatives
1. William A. Barrett (D)
2. Robert N. C. Nix (D)
3. James A. Byrne (D)
4. Joshua Eilberg (D)
5. William J. Green (D)
6. Gus Yatron (D)
7. Lawrence G. Williams (R)
8. Edward G. Biester, Jr. (R)
9. John Ware III (R)
10. Joseph M. McDade (R)
11. Daniel J. Flood (D)
12. J. Irving Whalley (R)
13. R. Lawrence Coughlin (R)
14. William S. Moorhead (D)
15. Fred B. Rooney (D)
16. Edwin D. Eshleman (R)
17. Herman T. Schneebeli (R)
18. Robert J. Corbett (R)
19. George A. Goodling (R)
20. Joseph M. Gaydos (D)
21. John H. Dent (D)
22. John P. Saylor (R)
23. Albert W. Johnson (R)
24. Joseph P. Vigorito (D)
25. Frank M. Clark (D)
26. Thomas E. Morgan (D)
27. James G. Fulton (R)

RHODE ISLAND

Senators
John O. Pastore (D)
Claiborne Pell (D)

Representatives
1. Fernand J. St. Germain (D)
2. Robert O. Tiernan (D)

SOUTH CAROLINA

Senators
Strom Thurmond (R)
Ernest F. Hollings (D)

Representatives
1. Vacant
2. Floyd D. Spence (R)
3. Wm. J. Bryan Dorn (D)
4. James R. Mann (D)
5. Tom S. Gettys (D)
6. John L. McMillan (D)

SOUTH DAKOTA

Senators
Karl E. Mundt (R)
George S. McGovern (D)

Representatives
1. Frank E. Denholm (D)
2. James Abourezk (D)

TENNESSEE

Senators
W. E. Brock III (R)
Howard H. Baker, Jr. (R)

Representatives
1. James H. Quillen (R)
2. John J. Duncan (R)
3. La Mar Baker (R)
4. Joe L. Evins (D)
5. Richard Fulton (D)
6. William R. Anderson (D)
7. Ray Blanton (D)
8. Ed Jones (D)
9. Dan H. Kuykendall (R)

TEXAS

Senators
Lloyd M. Bentsen, Jr. (D)
John G. Tower (R)

Representatives
1. Wright Patman (D)
2. John Dowdy (D)
3. James M. Collins (R)
4. Ray Roberts (D)
5. Earle Cabeli (D)
6. Olin E. Teague (D)
7. W. R. Archer (R)
8. Bob Eckhardt (D)
9. Jack Brooks (D)
10. J. J. Pickle (D)
11. W. R. Poage (D)
12. Jim Wright (D)
13. Graham Purcell (D)
14. John Young (D)
15. Eligio de la Garza (D)
16. Richard White (D)
17. Omar Burleson (D)
18. Robert Price (R)
19. George Mahon (D)
20. Henry B. Gonzalez (D)
21. O. C. Fisher (D)
22. Bob Casey (D)
23. Abraham Kazen, Jr. (D)

UTAH

Senators
Wallace F. Bennett (R)
Frank E. Moss (D)

Representatives
1. K. Gunn McKay (D)
2. Sherman P. Lloyd (R)

VERMONT

Senators
George D. Aiken (R)
Winston L. Prouty (R)

Representative-at-large
Robert T. Stafford (R)

VIRGINIA

Senators
Harry Flood Byrd, Jr. (I)
William B. Spong, Jr. (D)

Representatives
1. Thomas N. Downing (D)
2. G. William Whitehurst (R)
3. D. Satterfield III (D)
4. Watkins M. Abbitt (D)
5. W. C. Daniel (D)
6. Richard H. Poff (R)
7. J. Kenneth Robinson (R)
8. William L. Scott (R)
9. William C. Wampler (R)
10. Joel T. Broyhill (R)

WASHINGTON

Senators
Warren G. Magnuson (D)
Henry M. Jackson (D)

Representatives
1. Thomas M. Pelly (R)
2. Lloyd Meeds (D)
3. Julia Butler Hansen (D)
4. Mike McCormack (D)
5. Thomas S. Foley (D)
6. Floyd V. Hicks (D)
7. Brock Adams (D)

WEST VIRGINIA

Senators
Jennings Randolph (D)
Robert C. Byrd (D)

Representatives
1. Robert H. Mollohan (D)
2. Harley O. Staggers (D)
3. John Slack (D)
4. Ken Hechler (D)
5. James Kee (D)

WISCONSIN

Senators
William Proxmire (D)
Gaylord Nelson (D)

Representatives
1. Leslie Aspin (D)
2. Robert Kastenmeier (D)
3. Vernon W. Thomson (R)
4. Clement J. Zablocki (D)
5. Henry S. Reuss (D)
6. William A. Steiger (R)
7. David R. Obey (D)
8. John W. Byrnes (R)
9. Glenn R. Davis (R)
10. Alvin F. O'Konski (R)

WYOMING

Senators
Gale W. McGee (D)
Clifford P. Hansen (R)

Representative-at-large
Teno Roncalio (D)

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