

INTERCULTURAL COMMUNICATION ON A PASSENGER AIRCRAFT FLIGHT DECK:
A QUALITATIVE STUDY SET IN THE CONTEXT OF SOUTH AFRICAN CORPORATE
AFFIRMATIVE ACTION POLICY.

THESIS

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ABSTRACT

The recent emphasis on Affirmative Action policies in South African corporations has illuminated the issue of cultural diversity in organizations and the difficulties arising from this transition and change. One such difficulty is the problem of intercultural communication where miscommunication can have life-threatening consequences. This problem is particularly critical - in the operational environment of the passenger aircraft flight deck where small group factors, as well as intercultural issues must be taken into account. In this thesis the problem of intercultural communication in such contexts, as a consequence of Affirmative Action is examined. The data for this thesis comprises the communication of five culturally diverse flight crews. A multi-method was used for the gathering and analysis of this data. This involved the use of video-taped flight simulator sessions, and personal interviews with each crew member. The subjects themselves were involved in identifying key communication problems from the video and interpretation of the data. Three levels of analysis were used in the interpretation of the findings - the individual, the group and the organization. The factors which affected communication at each level in the small, culturally diverse group are highlighted. Furthermore, factors which influence the climate in which communication takes place are also considered. The implications for Affirmative Action are discussed.

TABLE OF CONTENTS

<u>Chapter</u>	<u>Page</u>
1. INTRODUCTION.	1
2. CONCEPTUAL AND CONTEXTUAL ISSUES.	6
2.1. Small Groups and Communication.	8
2.1.1. The Characteristics of the Small Group.	9
2.1.2. Individual Factors Affecting Small Group Communication.	9
2.1.2.1. Personality and Personal Qualities.	9
2.1.3. Group Factors Affecting Small Group Communication.	12
2.1.3.1. Interdependence.	12
2.1.3.2. Cohesion.	13
2.1.3.3. Participation.	17
2.1.3.4. Norms and Roles.	20
2.1.3.5. Group tasks and goals.	25
2.1.4. Organizational Factors Affecting Small Group Communication.	27
2.1.4.1. The Operational Environment of the Flight Crew.	27
2.1.4.2. Affirmative Action Policy.	29
2.1.5. Summary.	31
2.2. Intercultural Communication.	33
2.2.1. Culture.	35
2.2.2. Organizational Culture.	36

TABLE OF CONTENTS CONTINUED

	<u>Page</u>
2.2.3. Individual Factors Affecting Intercultural Communication.	39
2.2.3.1. Language Competence.	39
2.2.3.2. Group Identity.	40
2.2.3.3. Stereotyping.	41
2.2.3.4. Attitudes.	44
2.2.3.5. Expectations.	45
2.2.4. Group and Intergroup Factors Affecting Intercultural Communication.	46
2.2.4.1. Cultural Differences.	46
2.2.5. Organizational Factors Affecting Small Group Communication.	55
2.2.5.1. Socialization and Adaptation.	55
2.2.5.2. Acculturation.	56
2.2.5.3. Integration in Organizations.	58
2.2.6. Summary.	59
 3. THE STUDY.	 61
 3.1. The Research Objectives.	 61
3.2. The Organizational and Historical Context.	61
3.3. The Method.	62
3.3.1. The Sample.	63
3.3.2. The Data Analysis.	63
3.3.2.1. The Audio-video Recordings.	63
3.3.2.2. The Interviews.	65
3.3.2.3. The Extraction of Themes.	66

TABLE OF CONTENTS CONTINUED

	<u>Page</u>
4. THE RESULTS.	67
4.1. The First Officers.	67
4.2. The Audio-videos.	69
4.2.1. The Critical Incidents	69
4.2.2. Interpretation of Critical Incidents	70
4.3. The Interviews	79
4.3.1. Individual Level Themes	79
4.3.1.1. Ability and Experience	79
4.3.1.2. Stereotypes, Expectations, Prejudices and Suspicions	80
4.3.1.3. Attitudes	82
4.3.1.4. Language	83
4.3.2. Group Level Themes	84
4.3.2.1. Role Structure, Rank Structure, Status and Power	84
4.3.2.2. Norms, Standards of Behaviour, Cohesion and Conformity	85
4.3.2.3. Crew Composition	88
4.3.2.4. Standard Operating Procedures	89
4.3.3. Organizational Level Themes	90
4.3.3.1. Affirmative Action	90
4.3.3.2. Social Interaction	90
4.3.3.3. Adaptation	92
4.3.3.4. Acculturation	96

TABLE OF CONTENTS CONTINUED

	<u>Page</u>
5. DISCUSSION OF THE RESULTS.	97
5.1. Discussion of Themes	97
5.1.1. Individual Level Themes	97
5.1.1.1. Qualifications and Experience	97
5.1.1.2. Ability and Experience	99
5.1.1.3. Stereotypes	100
5.1.1.4. Attitudes	102
5.1.1.5. Language	105
5.1.1.6. Leadership Style	107
5.1.2. Group Level Themes	109
5.1.2.1. Cohesion and Individual Autonomy	109
5.1.2.2. Participation by Crew Members	109
5.1.2.3. Role Structure and Definition in the Cockpit	110
5.1.2.4. Norms	113
5.1.2.5. Cultural Differences	117
5.1.2.6. Standard Operating Procedures	118
5.1.2.7. Crew Composition	119
5.1.3. Organizational Level Themes	120
5.1.3.1. Affirmative Action Policy	120
5.1.3.2. Social Interaction	121
5.1.3.3. Adaptation and Acculturation	123

TABLE OF CONTENTS CONTINUED

	Page
6. CONCLUSIONS AND RECOMMENDATIONS.	129
7. REFERENCES	133
8. APPENDIX	142

LIST OF FIGURES.

	<u>Page</u>
Figure 1. A Model of the Elements and Factors which Influence Communication on the Flight Deck.	8
Figure 2. Factors Affecting Small Group Communication.	9
Figure 3. Factors Affecting Intercultural Communication.	39

LIST OF TABLES.

	<u>Page</u>
Table 1. The Type and Frequency of Critical Incidents Regarding Communication.	
Video-tape data.	70
Table 2. Interpretation of Critical Incidents. Crew A.	71
Table 3. Interpretation of Critical Incidents. Crew B.	73
Table 4. Interpretation of Critical Incidents. Crew C.	74
Table 5. Interpretation of Critical Incidents. Crew D.	76
Table 6. Interpretation of Critical Incidents. Crew E.	78

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CHAPTER 1

INTRODUCTION

Flying a multi-pilot transport aircraft involves a small group performance situation in which social, organizational and personality factors impact significantly on the ultimate safety of the flight operation. Two important elements contribute to cockpit functioning. The first is the technological element, which, together with international flying policies and standards, remains relatively stable. The second element is the protean interplay of human factors in the cockpit. These have an inevitable impact on the effective functioning of the crew.

Evidence of the importance of human factors is shown in statistics provided by the National Aeronautics and Space Administration (NASA). NASA has reported that at the heart of 80-90% of aviation accidents, lies the "people factor". Seventy percent of 28 000 incident reports to NASA between 1976 and 1981 were primarily related to a failure in voice communication (Cockpit Management Training Program, 1987).

The large percentage of aircraft incidents and accidents linked to pilot error has forced airlines to focus increasing attention on the performance characteristics of the flight crew. Flying remains the safest form of transport. However, when air disasters have occurred, they have happened too often because Captains have not acknowledged the warnings of other crew members (Foushee, 1984). Alternatively, crew members who have possessed adequate information, have for some reason not provided it to others. A review and analysis of jet transport accidents worldwide from 1968 to 1976, showed more than 60 accidents in which breakdowns of the crew performance process played the major role (Foushee, 1984). This suggests a needed increase in emphasis on crew performance and the factors which affect crew coordination.

The recent shift towards human factors training is in contrast to previous approaches. Hawkins (1987) illuminates the emphasis of the past:

Aircrew training and proficiency testing has traditionally been done on an individual basis. If each individual crew member were proficient, then it was assumed that the team consisting of these individuals would also be proficient and effective. (p. 54)

This mindset was reinforced by the image of the pilot which emerged from a time when aviation was dangerous and awe-inspiring. These conditions contributed to a profile characterised by Tom Wolfe (1979) as the "right stuff" (Foushee, 1984).

An individual who typifies the right stuff is generally described as a highly goal-oriented, extremely self-reliant, macho, decisive person. Although it is easy to visualize such individuals functioning effectively as fighter or test pilots, it is more difficult to view them as good team players. (p. 891)

The regulations governing pilot qualifications still focus on individual pilot proficiency. However, as Hawkins (1987) points out, attempts are being made in some training programs to refocus on group performance.

Many airlines are emphasising the management of flight deck resources through formal courses in cockpit resource management (CRM). These courses deal with both attitudes and behaviour. Basic personality is a much more difficult question, but a good CRM program can minimally affect personality traits in some cases. (p. 183)

With the recent shift towards cultural diversity, additional variables concerning cultural differences and intercultural communication on the flight deck are being highlighted. In line with the recent emphasis on Affirmative Action policies in South Africa, South African Airways (SAA) has introduced its own policy of Affirmative Action by recruiting a significant number of Black pilots to fill new positions. By the year 2000 SAA hopes to have changed the composition of the workforce to an 80% Black, 20% White ratio. The term "Black" is used here as a generic term referring to Black and Indian people.

As an organization dealing with Affirmative Action for the first time, SAA must be prepared to confront the specific issues and difficulties which are likely to arise during this period of transition and change. One of the important challenges to be faced by SAA is the impact of culturally diverse individuals on communication in general, and flight deck communication in particular.

The concept of cultural diversity in the areas of aviation has recently received increased attention because of its influence over the performance and interaction of the flight crew. Several research papers have investigated the factors associated with intercultural communication on the flight deck (Johnston, 1993; Maurino, 1992; Merritt, 1993). One of the limitations of the existing research is its overemphasis on differences and similarities between cultural groups, and its failure to address the process aspect of adaptation and change required in small-group, intercultural contexts. Previous research has focused predominantly on the interface between the American, Latin American and Eastern cultures. Little attention has been given to the African situation and questions can be raised about the applicability of the research in the local context.

However, research findings do suggest that cultural differences are prevalent and significant. Merritt (1993) reported that different cultures will have different needs in terms of human factors training. Ooi (cited by Johnston, 1992) observed that:

...because of the different value systems amongst the cultural subgroups, their perception of reality are different, their learning styles are different and in the area of performance, their decision-making styles are different. (p. 7)

Furthermore, Peterson and Bond (1989), in Johnston, (1992), pointed out that 'transcultural dimensions of leader style can indeed be identified, but the skill of executing each style effectively varies by cultural setting.' (p. 9)

Given the need for greater attention to intercultural communication in the cockpit and the specific context of SAA Affirmative Action policy, this research has the objective of providing a contextual analysis of intercultural communication. In this thesis, while the focus is on intercultural communication between individuals on the flight deck, factors that influence this are considered in terms of three levels: the individual, the group and the organization.

At the individual level, cultural differences may influence the attitudes of the crew members and preferred leadership styles. Stereotype-casting and prejudices cultivated from previous experience (perhaps outside the aviation environment) might enter the cockpit situation and can either facilitate or inhibit group functioning. At the same time, language differences are likely to complicate communication on the flight deck.

With regard to crew interaction, the type and quality of information exchange may be altered due to differences in language, experience and education. In an attempt to compensate for these differences, a stricter adherence to standard procedures may occur. As a result, the possible de-emphasis of critical deviant information, is likely to become a crucial factor in crew performance.

At the group level, differences in status and power may influence the climate in which communication takes place, as well as the communication process itself. Furthermore, although Standard Operating Procedures (SOPs), provide tightly defined limits for behaviour, there can be definitional diversity and varied application by crew members. SOPs themselves may be subject to cultural and subcultural variation (Johnston, 1991; Maurino, 1992; Merritt, 1993).

At the organizational level, accommodation will have to take place on the part of established, as well as, new members. This in turn will doubtless affect the atmosphere in which communication takes place.

Using this structure (the three levels) in understanding communication and cultural differences at different levels, data was gathered on intercultural communication on the flight deck through observations of actual interactions in simulator sessions and interviews with five culturally diverse crews. This information provides the empirical basis for coming to an understanding of the challenges and problems of intercultural communication that arise from the Affirmative Action policy of SAA.

The conceptual and contextual issues, the results and the discussion are structured according to the three levels of analysis. In the chapters concerned with the conceptual framework, small group communication is explored by focusing on the individual, group and organizational aspects which affect communication in the small group. Following this, the additional variable of cultural diversity and its impact on communication on individual, group and organizational levels is examined.

Chapter Three provides a detailed description of the methodology used in this thesis. Chapter Four includes a presentation of the findings, from both the interviews and the simulator sessions. Chapter Five provides a detailed analysis and discussion of the themes extracted from the data. Both Chapters Four and Five are structured according to individual, group and organizational levels of analysis. Finally, Chapter Six provides a summary of the findings, conclusions and recommendations for further research.

CHAPTER 2

CONCEPTUAL AND CONTEXTUAL ISSUES

The flight crew may be described as a small group or team, where factors such as cohesion, co-operation and adherence to norms influence crew coordination (Johnston, 1992; Phelan, 1994). Hackman (1987) draws a comparison between the work of the cockpit crew and the performance of a ballet:

Although a ballet is indeed an ensemble performance, each member of the company has his or her own part to play, and those parts are carefully choreographed beforehand. If each dancer does precisely the right thing at the right time, the performance can unfold beautifully. (p 259)

Although the abilities and characteristics of individual members are important, research indicates that a team-work approach is more significant for the overall performance and safety of the flight (Collins & Manning, 1990; Foushee & Helmreich, 1988; Helmreich, Chidester, Foushee, Gregorich & Wilhelm, 1989; Johnston & Maurino, 1990).

Furthermore, the flight crew is a small group which operates within a very structured environment: the flight deck. The flight crew involved in this study consists of three crew members: the Captain, First Officer and Flight Engineer. The communication between these three individuals is vital for the safe completion of the flight. Although the group operates ultimately as a triad, situations do occur when communication occurs predominantly between the Captain and First Officer. Thus, under these circumstances, dyadic communication occurs. Dyadic members seem to use fewer disagreeing or antagonistic messages towards each other than larger numbers. Furthermore, the fundamental distinction between dyads and groups containing more than three people, is that there is a demand on the dyad to achieve consensus on pertinent issues. Unlike the larger group, the dyad cannot seek the majority support (Mabry & Barnes,

1980). The focus of the study, however, is primarily on the triad, the flight crew. Attention to dyadic issues will be given where appropriate.

The recent shift towards cultural diversity introduces another variable: the variable of culture. The central focus of this thesis is on the extent to which cultural diversity affects communication in the cockpit and the climate in which that communication takes place. Figure 1. illustrates this scenario. The three inner circles (Captain, Copilot and Flight Engineer) represent the individuals. These individuals, however, come together to form a small group on the flight deck (represented by the circle which encompasses the three individuals). The group processes of interaction and communication - the focus of the study - are represented by the arrows between the three individuals. The flight deck, however, is positioned within a broader context, namely the aviation environment and, in the particular case in point, involves the operating environment of SAA and the Affirmative Action programme. This is represented by the broader circle as these issues also impact on the flight deck group processes and the individual levels. Finally, cutting through all these levels are the cultural issues and diversity. This is represented by the lines which move through the circles down to the individual levels. To the extent that there is cultural diversity across these three individuals, communication and interaction is likely to be influenced by cultural matters.

The sections to follow attend to a number of aspects: the small group process and communication of flight crews, the operating environment and Affirmative Action policy and how this may affect group process and communication, and the intercultural issues that impact on small group process and communication. These aspects are discussed from the three angles previously highlighted: individual, group and organizational. Each of these form the major levels for the structure of the discussion.

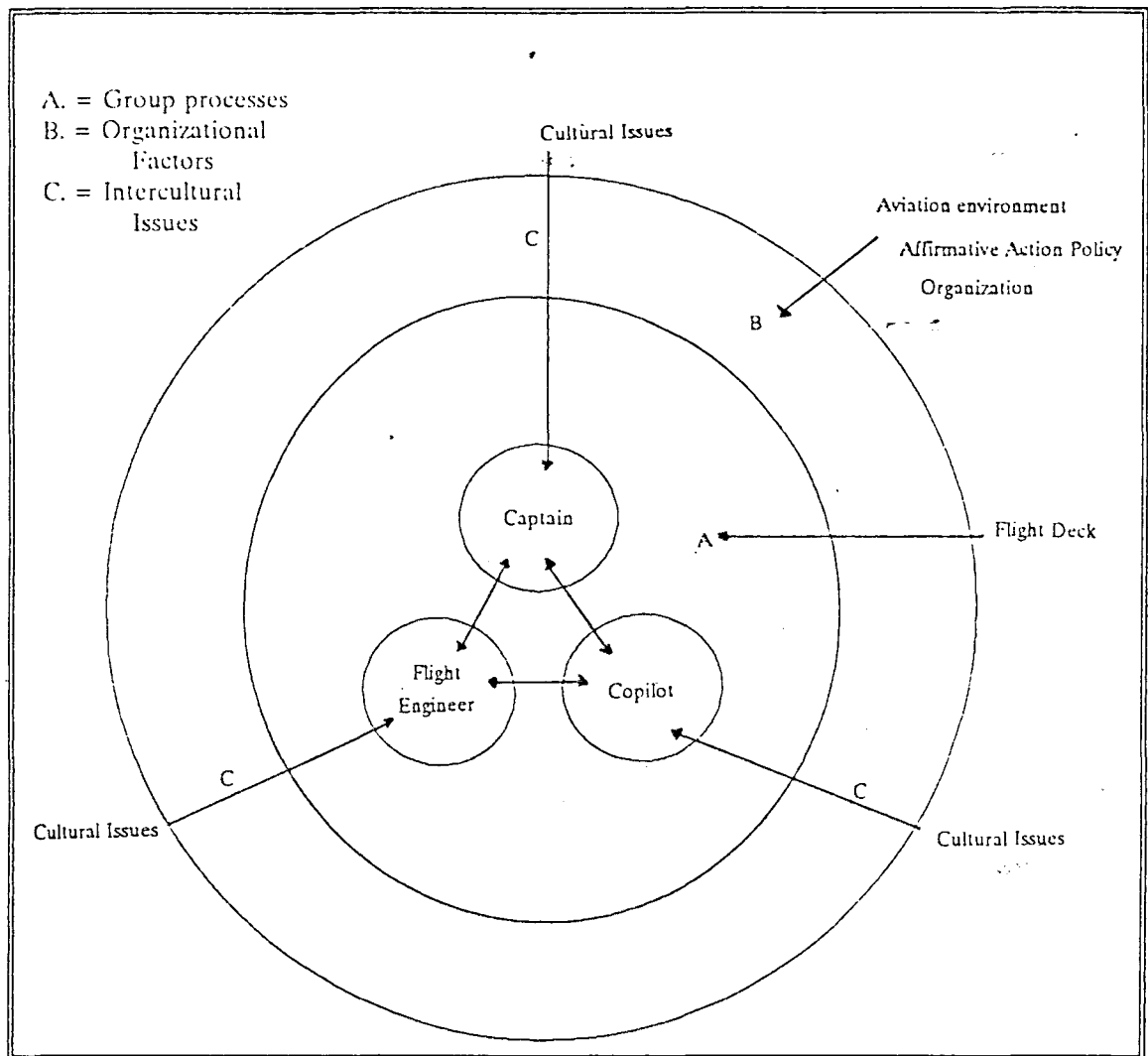


Figure 1: A model of the elements and factors which influence communication on the flight deck.

2.1. SMALL GROUPS AND COMMUNICATION.

Since the flight crew may be regarded as a prototype of the small group, it is necessary to examine the phenomena of the small group in more depth.

In this section the characteristics of small groups and the factors which affect small group communication are closely examined. Figure 2. illustrates these three levels and the factors discussed under each heading.

Factors Affecting Small Group Communication		
<u>Individual Factors</u>	<u>Group Factors</u>	<u>Organizational Factors</u>
Personality and Personal qualities	Interdependence Cohesion Participation Roles and Norms Tasks and Goals	The operational environment Affirmative action policy

Figure 2. Factors Affecting Small Group Communication.

2.1.1. The characteristics of the small group.

The study of small groups is a complex undertaking, which examines a vast selection of variables and factors impinging upon the dynamics, behaviours and communication at play in the small group. Barker, Wahlers, Watson and Kibler (1991) provide a definition which encompasses the majority of the dimensions usually associated with the term "small group".

A small group is a collection of individuals, from three to fifteen in number, who meet in face-to-face interaction over a period of time, generally with an assigned or assumed leader, who possess at least one common characteristic, and who meet with a purpose in mind. (p. 8)

Simple aggregates of individuals will therefore not fit the definition of a group, because of the absence of interaction over time (Schein, 1980).

2.1.2. Individual factors affecting small group communication.

2.1.2.1. Personality and personal qualities.

Each member of a group brings a different personality and a different set of values to the group scenario. The significance of these factors is aptly described by Paton. Giffin and Paton (1989):

It is entirely logical as well as likely that different members of the same group will initially disagree on various aspects of a problem as they attempt to analyze it. Because of different experiences, value systems, and sources of information, they will vary in their degree of recognition of the importance (or even existence) of certain impelling and constraining forces. Disagreement on the interpretation of relevant aspects of a problem is to be expected, tolerated, discussed, and eventually resolved by open and frank consideration of each other's viewpoints. (p. 138)

Even under circumstances where group members are similar along the lines of ethnic origin, culture and physical attributes, the personalities of members will differ to a greater or lesser extent. Given the added dimension of cultural diversity, there is the inclusion of sometimes vast cultural differences between group members, which may impact further on the communication and participation process.

There are two particular personal qualities which the individual must bring to the group to ensure group success and effective group communication. The first is personal credibility. How knowledgeable the individual is and how well he or she articulates that knowledge will determine that person's reputation and status in the group. The ability to share information, provide support for one's ideas and show fairness to others, will establish credibility to a greater extent than age, sex, occupation and ethnicity. Related to credibility are the concepts of trustworthiness and competence. When individuals initially participate in a group, very little is known about them. Trust will develop as the individual discloses information about him or herself. The competent individual will earn credibility by being able to direct and move the group towards group goals.

Secondly, sensitivity is an important personal quality impacting on the group. The sensitive individual is responsive to the values and opinions of others. Such individuals will be aware of the feelings, frustrations and fears of fellow group members. Sensitivity depends on the ability to deliver an appropriate response to other group members (Schultz, 1989).

On the flight deck the patterns of individual skills, physical state, attitudes and personality characteristics that each member brings to the team, is of significance. The individual skills will affect the level of competence and the resources that the group has at its disposal, while physical states such as fatigue will influence performance and motivation. Personality and attitudinal factors will affect how the group actually works together (Foushee & Helmreich, 1988).

In addition to these aspects, the leadership styles of the Captains on the flight deck influence communication and group interaction. Styles of leadership have mostly been categorized according to task versus relationship orientation and democratic versus autocratic orientation. The task oriented person approaches the job in an instrumental way, focusing on the task, whereas the relationship oriented person will focus on creating and maintaining interpersonal relationships. This does not mean that the task oriented person is not concerned with relationships, or that the relationship oriented person is not concerned with tasks, but rather that they play a secondary role.

In the cockpit environment, where there are highly structured tasks and powerful leader positions; task oriented leaders perform better where there are good interpersonal relationships within the group. Where leader-member relations are poor, group-oriented leaders perform more effectively. Thus, the type of leadership that is most effective depends on the type of group and the task which the group must complete (Foushee & Helmreich, 1987; Harris & Muir, 1986).

Blake and Mouton (1978) suggest that the most effective leader seems to be one who can combine, or alternate between the two styles, depending on the situational factors. Furthermore, Hackman (1987) suggests that Captains should behave in ways that encourage task accomplishment and interpersonal harmony, and should avoid domineering or unfaltering democratic leadership styles.

With regard to sensitivity and credibility, these two factors affect the climate in which communication takes place. Where individual members are perceived as competent and sufficiently sensitive, communication will be more open and effective.

2.1.3. Group factors affecting small group communication.

2.1.3.1. Interdependence.

Regardless of the diversity of groups, one factor remains common to most groups. This is the fact that members are interdependent. Brown (1988) describes this as the event where "one person's experiences, actions and outcomes are linked in some way to the experiences, actions and outcomes of the others in the group." (p. 27)

Sherif and Sherif (1969) in Brown (1988) defines group structure as, "an interdependent network of roles and hierarchical status." (p. 52). Mabry and Barnes (1980) emphasize that "the essence of a group is that a collection of individuals have relationships that make them interdependent to some significant degree." (p. 180). The group may be likened to a system, where the system consists of integrated parts of elements and where these elements interrelate and influence one another. Thus, when one element changes, all other elements of the system will eventually change.

Several important social processes take place as a consequence of the interdependence that occurs in groups. For instance Mann (1988) suggests that:

Conformity to norms is enforced in order to maintain the group's cohesion and stability. Cooperation between its members is encouraged in order to ensure that the group moves towards its goals. In order to shape the manner and efficiency with which these goals are realized, the group becomes differentiated along the dimensions of friendship, leadership, communication and responsibility for tasks. (p. 159)

It is furthermore recommended that this state of interdependence can be regarded as cohesion and is dependent upon the communication and participation of the group members.

2.1.3.2. Cohesion.

The second group factor affecting small group communication is cohesion. Mills and Murgatroyd (1991) suggest that when examining the relationships within a group, special attention should be paid to the idea of cohesion, the extent to which there is a bonding of identities in the group and the extent to which such bonding may limit the autonomy of individuals within the group. Furthermore, cohesiveness refers to the "ability of group members to get along, the feeling of loyalty, pride, and commitment of members toward the group." (Ellis & Fisher, 1994, p. 23).

A group derives its strength from the extent to which similar goals and ways of working are shared by the group and from the unique qualities which each individual brings to the groups, but the bonding of the group can act as an inhibitor action, unless the individual perceives an action to be appropriate in the context of the group. (Mills and Murgatroyd, 1991, p. 37)

Thus, the level of cohesiveness is likely to have an extensive influence over group members.

Patton, Giffin and Patton point out the following:

A positive personal consequence of increased cohesiveness seems to be greater acceptance, trust, and confidence among members, resulting in a sense of security and personal value. People feel free to disagree and even express hostility. A negative consequence of cohesiveness is seen in a group's need for unanimity, (which) overwhelms a member's realistic appraisal of alternative courses of action. (p. 109)

Cohesiveness is achieved when groups maintain their norms and solidarity through systems of rewards and punishments. Rewards are achieved through satisfaction of individual needs and punishments occur when members deviate from group expectations. Such punishment may be direct or indirect.

This observation led Minuchin (1974) in Mills and Murgatroyd (1991) to suggest that group cohesiveness can be regarded as something which is experienced in different ways in different

groups. He suggests that in looking at cohesiveness there is a continuum between highly cohesive groups which have very weak levels of individual autonomy within the group and at the other extreme, a high level of autonomy and very little cohesion.

Between these two extremes are two other moderate relationship patterns, according to Olson et al (1979) in Mills and Murgatroyd (1991): connected and separate. A connected group is one in which there is a degree of commitment to the group, but where individual autonomy is also encouraged. In a separated group individual autonomy is more important than the cohesiveness of the group. The group does have some identity, however, which is stronger than that of a completely disengaged group.

Two factors impact on the level of cohesiveness in the group: leadership style and group size. Leadership style is essential for building cohesiveness. Each member should be able to contribute some degree of leadership to the group and be willing to form an essential part of team building. Group size impacts on the variety of skills and abilities available to the group. In small groups such as the flight crew, leaders must be able to alternate between, or combine task oriented leadership and group-oriented leadership as discussed previously (Foushee & Helmreich, 1987). Furthermore, we find that the level of cohesion in three person groups is higher because of the unlikelihood of subgroups forming and because each member has a better opportunity for participating in the group process.

The optimal level of cohesiveness has been extensively debated. Marvin Shaw, in Wilson and Hanna (1990) suggest that high-cohesive groups are more effective than low-cohesive groups in achieving their goals. However, Fisher in Wilson and Hanna (1990) argue that a high-cohesive group can only be productive up to a point of cohesion, and that extremely cohesive groups are likely to be counterproductive. At the same time, highly cohesive groups will find that their

communication becomes ineffective.

This is due to two main reasons. Firstly, the group may begin to focus more on their relationships than the task at hand, and secondly, in an effort to preserve and foster their relationships, members of the group may be reluctant to challenge each other's ideas.

The main problem associated with highly cohesive groups is "group think". This occurs when group members conform too readily to group norms (Wilson & Hanna, 1990; Porter, Lawler & Hackman, 1987). Essentially, the theory of "groupthink" suggests that when groups are too cohesive, the group as a whole becomes unable to test their decision-making against reality. Several conditions might promote the phenomena of groupthink. The first, as already mentioned is excessive cohesiveness. The second, occurs when there is insulation from contradictory sources, preventing members from receiving information and opinions. The third, is a lack of impartial leadership. An impartial leader can use his or her power and position to influence the group to approve his or her suggestions. Finally, when groups do not have any norms or rules about the methods or procedures they will use, both leaders and members will be free to act indiscriminately. On the flight deck the phenomena of "groupthink" is particularly dangerous to the safety of the flight because of the importance of alerting members to deviant information.

Highly cohesive groups may also experience problems related to decision-making. These are termed "logical process" problems. Hirokawa in Patton, Giffin and Patton (1989) suggests that a group's failure can be attributed to an interplay of six factors:

- The group's misunderstanding of the problematic situation. When members base their decisions on inaccurate, or inappropriate premises regarding the problem, poor decisions are made.
- The group's overestimation of the positive benefits of alternative choices.

- The nature of values accepted and utilized by the group as decisional premises. This involves making decisions based on value judgements instead of facts.
- The group's acceptance of inaccurate or invalid information.
- The group's rejection of accurate or valid information.
- The persuasive influence of group members. A persuasive member may override other more logical suggestions.

The logical process problems are particularly important in the context of the flight crew. Crews which experience logical process problems are also likely to jeopardize the safety of the flight, particularly under emergency situations. For example, when crew members misunderstand a problematic, or critical situation, procedural problems (discussed with regard to roles and norms), are also likely to occur. This is because every possible complication or problem can be solved by following prescribed procedures. When the problem is initially misunderstood, incorrect procedures are likely to be followed.

Furthermore, the acceptance of inaccurate or invalid information will lead to incorrect decisions and in turn inappropriate actions. Finally, when crew members overestimate the value of alternative courses of action, they may in fact be putting the flight in even more danger.

Cohesion and interdependence in small groups such as the flight crew, depends significantly upon effective participation and communication. Communication in the small group is complicated by the presence of other individuals. Each individual has his or her own goals and needs and each has a unique way of communicating.

2.1.3.3. Participation.

The third group factor affecting small group communication is participation. Communication essentially means participation. For communication to occur, members must participate in the group. This involves listening, making statements, asking questions, providing summaries and leading discussions (Goodall, 1990). Goodall further recommends that because the group is a cooperative endeavour, communication must be shared amongst group members. Each member should be able to participate equally, and the group should not be dominated by single individuals. Communication is synonymous with exchange. Members of small groups exchange information, opinions and responsibilities. Through statements and questions and through activities that are performed and acted on, it is possible to observe that exchanges are being made.

Effective participation depends on a number of commitments on the part of the individual member. Firstly, there must be a commitment to perform at one's best by contributing individual skills, abilities and responsibilities. Secondly, there must be a commitment to the good of the group. This means that members will subordinate some personal goals in favour of group goals. Furthermore, there is the commitment to cooperation, rather than competition. This essentially means that there must be an avoidance of one-up-manship. Finally, individual members must be committed to careful listening. This means not only hearing what a person has said, but also understanding it. These are the essential commitments which the pilot makes to the flight crew. When the pilot enters the flight deck, his or her commitment is to perform at a peak and put personal goals aside in favour of group goals. In particular, the commitment to cooperate must take precedence. This constitutes a change in emphasis from previous theories concerning group performance in aviation; where the Captain epitomized the autocratic leader (Foushee and Helmreich, 1987).

Participation and communication may also be understood in terms of the Johari Window representation (Thibault & Kelley, 1986). The Johari Window suggests that when individuals initially join a group, they will put forward a public persona, and are reluctant to disclose personal information. However, where there are fewer feelings, behaviours and motivations shared by the group, there will be limited participation by that individual and communication in the group will be less effective.

As time goes by and the participants risk expressions of self-disclosure, the person upholds the public persona less rigidly and expresses more of the private self. The individual may also receive feedback, thereby decreasing feelings and behaviours which are unconscious to that individual. Receiving feedback affects the person's behaviour, self-image and understanding of the others' perceptions. All these responses will increase the amount of information shared by the group and decrease those feelings and behaviors which are deliberately hidden from the group by the individual. In groups where feelings, behaviours and motivations are known and shared by the group, people will feel comfortable with one another and use their resources and skills freely on behalf of the group.

According to the Johari Window, miscommunication occurs when there is a limited sharing of these feelings and motivations. Under these circumstances, groups will continue to engage in ritualized behaviour which is not related to true feelings and will be unwilling or unable to give feedback. Participants will be unlikely to respond to what they hear because they are reluctant to reveal private information (Napier & Gershenfeld, 1987).

Although the majority of communication and participation on the flight deck revolves around the sharing of information and the process of decision-making, personal disclosure will enhance interpersonal relationships and increase the cohesion of the group. When interpersonal

relationships are strengthened, members of the group are more likely to verbalize disagreement and point out deviant information affecting the flight pattern.

Finally it may be said that the level of member satisfaction and the quality of interaction in the group depends upon three variables. First, there must be perceived freedom to participate. Members of groups must feel that they have the option to participate in the group, even though they may not actually do so. Wilson and Hanna (1990) describe the climate which promotes such participation:

The most important part of that environment, its climate of trust and acceptance, comes from the ways group members talk with one another. They reveal information about themselves and their values. They empathize with one another. They are straight with one another, never coloring the truth, never deliberately misrepresenting themselves or their information. (p. 29)

Second, there must be perceived progress towards the group goals. Group goals are one of the primary reasons individuals join groups and thus the individual derives satisfaction from knowing that the group is facilitating the achievement of those goals. Third, the group must agree that the roles and relative status of the members of the group are correct. This is known as status consensus.

Effective participation is particularly important on the flight deck. In aviation, one of the most significant factors impinging on crew performance and interaction is the flow of information within the group. Research by Foushee and Manos (1981) indicates that crews who communicated less performed less effectively. However the type and quality of communication plays a more salient role as pointed out by Foushee and Helmreich (1988):

In short, when more information was transferred about aspects of flight status, fewer errors appeared which were related to such problems as mishandling of engines, hydraulic, and fuel systems, the misreading and missetting of instruments, failure to use ice protection and so forth. (p. 209).

Information exchange such as described above ensures that all members have access to relevant information. However, Foushee and Helmreich point out that complete coordination or sharing of strategic plans could have a negative effect if the group norms do not allow for the processing of discrepant information. In other words, critical, conflicting information may be ignored or de-emphasized, in an attempt to preserve harmony. In addition to communication styles, the precision of communication is important. Intentions and commands need to be stated explicitly to ensure that they are understood by each member in the same way.

To confirm that the communication has been understood in the same way, crew members must acknowledge the communication of other crew members. Foushee and Manos (1981) also found that acknowledgments served the important purpose of validating that a certain piece of information had in fact been transferred. Such communication also served to reinforce the input of other crew members (Foushee & Helmreich, 1988).

2.1.3.4. Norms and roles.

The fourth factor affecting small group communication involves the norms and roles operating in the group. Collier (1986) in Borden (1991) states that in terms of communication competence "Persons are ethnically/culturally competent to the extent that they share perceptions as to appropriate ways of behaving and prefer the same outcomes from behaviour." (p. 214). Furthermore, when rules of appropriate behaviour are not known, shared, or are violated, meaning is less likely to be shared and the interaction more likely to be dissatisfying in terms of goal attainment. Thus, mutual acceptance and adherence to roles and norms is important for effective communication.

Any collection of people which can be classified as a group has certain norms, with a resultant conformity to these norms. (Burke, 1982; Hare, 1976; Patton, Giffin, & Patton, 1989; Smither,

1988). A group norm has been defined as a "shared acceptance of a rule. Members come to expect how other people will behave and how they themselves are expected to behave" (Patton et al, 1989, p. 103). Furthermore, DeRidder, Schruïjer and Tripathi, in Schruïjer, (1990) recommend that:

Group norms can be described as, if, then statements: If a certain situation is present for a member of the ingroup or outgroup, then this group member is obliged (should, ought to) perform a certain behaviour or abstain from a certain behaviour. If a group member is not behaving in accordance with a norm, that norm is being violated. (p. 48)

Norms are standards or rules of conduct to which people conform and which govern the behaviour of group members by providing the basis for coordination and communication. The behaviour of individuals reflects the extent to which they conform to or deviate from the norms. When a group is highly resistant to change it is because conformity to norms or sets of norms is strong. (Burke, 1982). The occurrence of a norm violation by a member of a group will have serious consequences for the rest of the group and is often seen as a trigger for negative intergroup behaviour.

In most groups, there will be members who do not adhere to the norms. These are known as deviants. In highly structured groups, deviance may be severely sanctioned, while in less structured groups, deviance may be tolerated to some extent (Gerson in Crosbie, 1975; Gowler & Legge, in Payne & Cooper, 1981).

Although the violation of a norm can lead to interpersonal and intergroup conflict, deviation from the norm may be useful on occasions. The deviant may be able to demonstrate alternatives to the established standards and provide an opportunity for other members to experience and evaluate nonconforming behaviour (Smither, 1988).

Roles are closely related to norms. Roles may be defined as "a class of one or more norms that applies to a person's behaviour with regard to some specific external problem or in relation to a special class of other persons." (Thibault and Kelley, 1986, p. 142). Thus, the way an individual behaves in a group, in contrast to the way in which the group as a whole behaves, is that individual's undertaking of a role. Roles in groups are established through communication with other members (Schultz, 1988).

Different expectations are associated with the different roles that people fulfil in a group (Lieberman, in Crosbie, 1975). This is known as role differentiation. Roles may be formally prescribed and various participants in the group will be assigned different jobs. When people are behaving according to specific roles, there are certain norms of behaviour which are appropriate for those roles. Whereas some of the norms in a group will apply to all members, some will only apply to members who occupy certain positions and fulfill certain roles. Members of a group are said to be fulfilling the same role if they have the same norms.

In addition to this, roles will also form part of the member's self-definition. A clearly defined role will contribute significantly to a member's identity within a group. With regard to roles, there is some status differentiation. In other words, the roles of different members may not be equally valued by the group and may also not carry the same power to exert influence or control over others (Brown, 1988). Furthermore, Mills and Murgatroyd (1991) emphasize that rules and roles relate to both boundaries and relationships. A boundary will mark the identity of a group or individual in an organization. These boundaries are defined not only by the tasks and roles of the individual, but also by the appropriate or inappropriate behaviours and levels of responsibility of the individual.

At the same time, status is linked with roles and norms. The roles in groups are not all equally valued, nor do they carry the same power to influence other group members (Brown, 1988). Therefore, individual roles will influence the individual's status in the group. Furthermore, status will influence communication in the small group by impacting on how members will speak and to whom they will speak. Status often implies power and the ability of one or more group members to influence the outcomes of any interaction (Tubbs, 1984). However, some individuals enter the group with a certain amount of status. This is ascribed status based on factors such as age, gender, position or wealth. Individuals may also be awarded status because of their abilities (Schultz, 1989).

Higher-status individuals are likely to speak more frequently, they receive more messages and are likely to be seen as more powerful and influential. Furthermore, high status members are likely to converse more frequently with other high status members. On the other hand, low status individuals are likely to withhold opinions and beliefs. This may be because they are uncertain of the responses they will receive, or because they feel they have not earned the right to speak (Tubbs, 1984).

Related to the concepts of status, roles and norms are the physical and mental territories within which members of a group operate. The physical territory is where the group interacts. Mental territories are the tasks which are assigned to individuals because of that person's experience, expertise, role and status. An encroachment on either of these two territories can cause conflict in the small group situation (Barker et al, 1984).

In the context of the flight deck there is a definitive role structure (chain of command) which is a powerful predictor of flight crew interaction. Thus the status of different crew members has a profound effect on the roles and norms fulfilled by that individual, as well as that person's

communicative behaviour. In aviation, position is largely determined by seniority and level of experience. The person in charge is usually the most experienced, followed by those of lesser experience and so on down the line. This role structure influences how subordinates interact with superiors. Status may affect communication in the sense that members of lower ranking may feel inhibited to communicate in the cockpit with very senior crew members.

In addition to this, status dictates what kind of communication takes place. For example, the Captain is likely to issue commands and seek the opinions of his crew members, while a First Officer is likely to follow orders and provide information when it is asked of him. A deviation from the norms and roles is likely to cause confusion, and interpersonal conflict on the flight deck.

Subordinate crew members have reported through the Aviation Safety Reporting System (ASRS), that Captains may be so insensitive and intimidating that crew members hesitate to speak up even in critical situations (Foushee, 1984). An example of such an incident is the following:

Air traffic control had issued a speed restriction which was repeatedly ignored by the captain. After several attempts had been made by the copilot to convey the information, the captain responded by saying "I'll do what I want." Air traffic control inquired as to why the aircraft had not been slowed, advised the crew that they had almost collided with another aircraft, and issued a new clearance which was also disregarded by the captain despite repeated clarification by the copilot. Following the last advisory from the copilot, the captain responded by telling the copilot to "just look out the damn window". (Foushee & Helmreich, 1988, p. 204).

Such incidents are of particular concern in aviation, since subordinate crew might become conditioned not to offer information after experiences with overbearing or intimidating Captains. In addition to the above, we find that although the prescribed role structure remains relatively constant, there could be wide variations in how cockpit roles are actually perceived and defined by the individual crew members (Johnston, 1992).

With regard to the norms and roles in a group, the small group may experience problems which are described as "procedural problems". For effective functioning in the group, members must be in agreement as to which procedures will be followed. Procedural problems are most likely to occur when there is role conflict and role ambiguity (Patton, Giffin & Patton, 1989). Role conflict occurs when group members are confronted with two or more conflicting roles. Role ambiguity occurs when members of the group are not clear about what is expected of them in terms of their kind of participation and behaviour on the job (Singer, 1990).

When crew members on the flight deck are uncertain about the roles which they are expected to play, confusion and misunderstanding will occur. At the same time, crew members are likely to encroach on the mental territories discussed previously. This results in a situation where some procedures are duplicated, while others are omitted because of the confusion concerning which crew member should be fulfilling which roles.

2.1.3.5. Group tasks and goals.

A final group factor affecting small group communication includes the tasks and goals of the group. Tasks are defined by Barker, et al (1991) as "an act, or its result, that a small group is required, either by someone or by itself, to perform." (p. 37) Furthermore:

A task is thus viewed as what people do, what they produce, or that on which they work in small groups. Tasks are performed by the group to accomplish goals. Generally we think of members of small groups as working on the task to achieve the goals, but sometimes the goal is to complete the task satisfactorily. (p. 37)

Tasks provide the group with some external measure for evaluating the performance and effectiveness of the group and in this sense contribute to self regulation. While individuals may be more proficient at solving some problems and completing some tasks, groups may be better equipped for solving other problems (Patton, Giffin & Patton, 1989).

Groups need to be aware of which tasks can most effectively be completed as a group, and which require individual effort. Complex tasks and decisions require members to compare their views and at times relinquish relentless conformity to the norm. Tasks place restrictions on the behaviour of group members. However, members may also place restrictions on themselves. Such constraints evolve from the way members view a task and each other. Furthermore, the group will develop norms that regulate how they should act in relation to those tasks. Norms have been discussed earlier in this section and so do not need a detailed description here. Suffice to say that norms exert a great deal of influence over individual activity.

Group goals have been alluded to above. The primary ambition of a group is the accomplishment of mutual goals. Two categories of behaviours are integral to the achievement of goals and tasks. These categories may be labeled task and maintenance behaviours. Both are necessary for the accomplishment of group goals (Benjamin, 1978, Patton, Giffin & Patton, 1989).

Task behaviours include initiating, clarifying and elaborating, seeking information or opinions, giving information or opinions, evaluating, coordinating and consensus testing. Maintenance behaviours are those which maintain the good working order of the group and are better known as "group maintenance" behaviours. These include harmonizing, gate keeping, encouraging, compromising, standard setting and testing and relieving tension (Patton, Giffin & Patton, 1989).

On the flight deck, the task behaviours are crucial to the safe execution of the flight. Maintenance behaviours, such as seeking the opinions of other crew members, and ensuring that all crew members are working together, and improving personal relationships and communication also contribute to the general effectiveness of the group as a team.

2.1.4. Organizational factors affecting small group communication.

The small group is constantly under the influence of the organization of which it is part. The organization creates expectations concerning how the group will complete its work, as well as the quantity and quality of the work. At the same time, many of the organization's routine work habits will be carried over to the group (Jensen, 1991).

2.1.4.1. The Operational environment of the flight crew.

There are two aspects to the operational environment of the cockpit crew: The nature of the cockpit environment; and the organizational factors which have an impact on the cockpit environment. Foushee (1984) suggests that input factors such as task characteristics, reward structure, position power and stress levels remain constant for cockpit crews.

It can be argued that task characteristics and position power are part of the nature of the environment in which the crew operates, whereas reward structure and stress levels constitute that which impacts on the environment.

The flight crew operates within a tightly prescribed operating environment with a clearly defined role structure; that of Captain, First Officer and Flight Engineer. This role structure determines the rights and responsibilities of individual crew members and represents an inviolate chain of command (Foushee & Helmreich, 1988).

Furthermore, inherent to the technical environment of the cockpit, is a tremendous amount of information that must be processed over short periods of time. In aviation, tasks are complicated by time constraints, vast amounts of confounding information and a highly technical environment. This underscores the importance of the coordination and definition of tasks and roles, a process

underpinned by Standard Operating Procedures which provide a framework within which cockpit behaviour is demarcated.

Furthermore, rigorous company hiring practices, employment conditions and flight standards, and regulations requiring frequent checking and retraining, contribute to the differentiation between appropriate and inappropriate behaviours in the cockpit (Foushee, 1984). These aspects have been explored at length in the discussion above.

With regard to the organizational factors which impact on the cockpit environment, we turn our attention to the rostering practices followed in airlines. The constant changes in crew composition results in a situation where crews seldom consist of the same three individuals. This may be seen as an environmental factor (because the rostering practice is an organizational policy imposed on the crews), but one which has implications for the dynamics within the group. The constantly changing composition deprives the crew members of the time and experience needed to build themselves into an efficient and effective team (Hackman, 1987).

Research shows that there is a distinct difference between the interaction of crews at the beginning of the duty cycle, and those at the end of a trip. After three days of flying with someone, the other crew members have some idea of that person's operational characteristics, communication style and personality as shown in Foushee and Helmreich (1988):

If you are a copilot, you know a lot about when and how an aircraft commander or captain likes to be assisted. If you are the person in charge you know more about how your subordinates supply information and how to best elicit their input. As everyone knows, there is wide variation in human interaction, and the more you know about someone, the better you are able to tailor your behaviour to the needs of the interaction. (p. 216).

Research conducted by Foushee and Manos (1981), referred to in Foushee and Helmreich (1988) indicates that crews who had flown together showed a higher level of communication overall and Captains of crews who had flown together issued more commands. This was seen to indicate a better understanding and division of responsibility between the crew members.

Furthermore, there were more suggestions and statements of intent made in crews that had flown together, indicating an increased willingness to exchange information. It was also particularly interesting that in crews which had flown together, there was more disagreement shown by first officers. This indicates that increased familiarity to some extent, encouraged subordinates to question the actions of Captains.

By contrast, in crews which had not flown together, there seemed to be more non-task related communication, indicating an attempt to get to know one another. However, also present was a higher level of frustration on the part of Captains who had not flown with the same Copilot before (Foushee & Helmreich, 1988). It must be stressed, however, that although the above findings might advocate the creation of permanent crews, this is not recommended. Permanent crews may result in complacency and boredom and perhaps even a decrease in performance due to increased familiarity.

2.1.4.2. Affirmative Action Policy.

Recent political developments have prompted South African companies to implement Affirmative Action policies. Broadly speaking, Affirmative Action is a proactive policy which attempts to ensure that members of previously disadvantaged groups gain adequate representation in the workforce and institutions of higher education. Furthermore, such representation must be in proportion to their numbers in the population (Smith, Crosby & College, 1992)

The implications are that existing White/Black ratios must change to an 80:20 ratio in South African companies. The existing feelings surrounding such policies are predominantly negative at this point. Affirmative Action is often seen as "reverse discrimination" which is doomed to fail. Several beliefs and perceptions underline such premonitions.

First, there is the perception that putting less qualified individuals into positions as "tokens" simply to fill a quota, will damage an already struggling economy and lead to a falling of standards. At the same time, quotas may stigmatize and prejudice those who in fact do have the talent for the job. Second, is the fear of reverse discrimination and preferential treatment. In this regard, preferential treatment and proportional representation are seen as "manufactured instead of earned, the result is racial representation at the cost of racial development." (Steele, 1990). In this regard, Affirmative Action has been criticised as a process which encourages victim status among Blacks and an acceptance of paternalistic handouts. Directly in line with the notion of reverse discrimination, is the suggestion that preferential treatment policies make Whites resentful and jealous (White backlash), and make the subjects of Affirmative Action feel patronized and doubtful of their own competence. Furthermore, Affirmative Action places emphasis on racial discrimination instead of trying to dispel it (Steele, 1990).

Third, referring to the American situation, Kendall and Louw (1989) suggest that there is no evidence that Affirmative Action has benefitted more than a small group of upper-middle class Blacks in the USA. Statistics showed that while advantaged Blacks forged ahead, disadvantaged Blacks actually fell further behind. Fourth, the shift towards an 80:20 ratio of Black to White employees is perceived as a major threat to established white employees as well as school leavers and graduates seeking employment. At the same time, retrenchements are a constant threat due to the present economic climate.

Since South African Airways has made a commitment to fulfilling a ratio of 80% Black to 20% White by the year 2000, the organization as a whole may begin to experience the repercussions of the negative attitudes and perceptions outlined above. Such attitudes and perceptions are likely to have a significant impact on interaction between employees in the organization in general, and on the flight deck in particular.

South African Airways, has, however, taken some steps towards tailoring their Affirmative Action policy to the needs of their employees by implementing a Cadet Pilot's Training Scheme. In this training course, prospective pilots with zero flying hours are selected according to strict recruitment procedures. The candidates are provided with training including mathematics, corporate training, technical training and formal flying training. This Cadet Pilot's Training Scheme has only recently been introduced and so does not influence the data collected for this study.

2.1.5. Summary.

The above discussion has centred around the concept of the flight crews as a small groups which can be regarded an open system. The critical points with regard to this idea may be summarized as follows:

- The personal credibility of the crew members may affect crew interaction on the flight deck and in the organization in general.
- The status of individual members of the flight crew may affect the style of communication used, as well as the amount of communication that takes place. For instance, a Captain may converse more with the Flight Engineer, who has a higher status, not only in the cockpit, but perhaps also socially, than the Black, First Officer.
- The flight crew is a small group where a high level of interdependence is evident between crew members. Every crew member has the capacity to influence the other crew members by his

behaviour. Where there is a deviation from the expected behaviour, interaction and communication may be affected.

- The flight crew is a highly cohesive group where there is very little scope for personal autonomy. At the same time, the flight crew must be aware of the possibility of groupthink and constantly ensure that this does not occur.
- Participation on the flight deck is crucial. Every crew member must be willing and able to participate effectively.
- Certain norms and roles are at play in the cockpit. Strict adherence to these norms is expected. Norm violations may result in communication misunderstanding, and may adversely affect the climate in which communication takes place.
- The flight crew must complete certain tasks and achieve certain goals. For this to occur, there must be an optimal use of both task and maintenance behaviours.
- The environment in which the crew operates influences crew interaction. Specifically, interaction and communication is influenced directly by the technical environment of the cockpit, or indirectly by the policies and practices of the organization at large.

2.2. INTERCULTURAL COMMUNICATION.

The central focus of this thesis is intercultural communication in the small group. The previous section examined the flight crew from a small group perspective, focusing on the aspects which affect small group communication. This section explores the added dimension of cultural diversity and its impact upon small group communication.

Upon entering the corporate environment, the individual is confronted by, and has to adapt to, a particular culture. In order to be accepted in the organization, he or she must, accommodate to the norms of behaviour and become part of the integrated whole. "Fitting in", however, is fairly complicated if one considers the variables which are at play in the process (DeBryn, 1992).

In the South African context, a discussion of communication between White and Black individuals in the workplace must take into consideration the hierarchy created by the social, political, economic and cultural factors surrounding that communication. In many ways this hierarchy is programmed into much of the speech and conversation between Whites and Blacks in the workplace (Brislin, 1981).

Knapp, Enninger and Knapp-Potthof (1987) suggest that Black individuals are likely to have a history of frustrating experiences with bureaucracies, resulting in a distrust of White officialdom. Black individuals are likely to experience a sense of powerlessness, stemming from the apartheid era and reinforced by the educational system.

Furthermore Knapp et (1987) acknowledged that:

Non-whites are also more likely to be perceived as members of the lower socio-economic strata, and have very little confidence in their ability to change their own circumstances through normal bureaucratic channels. Non-whites are likely to bring to the encounter less knowledge of the system, less information on their rights and lower hopes of success. In communicative terms, they are most unlikely to have any sense of co-membership, or to have the confidence or skills to take or maintain control over the process of interaction. (p. 29).

White members, on the other hand, are likely to have a strong sense of power, deriving both from their position as representatives of a White bureaucratic institution, and as representatives of the historically dominant culture. This is a result of the usual context for communication, in which Whites are in positions of power, while Blacks are in subordinate positions. This is particularly true in formal institutional situations (Knapp et al, 1987). As white collar workers, their social position will normally be higher than that of their Black colleagues, and their experience will give them greater self-confidence in the interview situation. Their knowledge of, and information about, the system is much greater than that of the Black member (Knapp et al, 1987).

However, even where informal interaction takes place, the White individual still holds a position of power: he or she is the property owner, member of the dominant culture and participant in the institutions which give power. The Black individual is in the subordinate role, whether as a minority in the workforce, unskilled worker, or "political instigator". The cumulative effect of such disparities in status and power will influence intercultural interaction in South African society. This broader social context shapes the attitudes and behaviour of individuals and will influence the process of interaction regardless of the personal views or qualities of the individuals involved (Knapp et al, 1987).

In addition to these factors, the individual enters the organization with his or her own values, norms, history, experience, expectations and culture, all of which, to some extent, must be aligned

to the culture of the workplace. During cross-cultural encounters, Whites are likely to define the interaction according to their own structure. Because of the power and status variables in communicative relationships, Black people are accepted, but not on intercultural terms. Rather, the terms are dictated by the White value system (DeBryn, 1992).

The place of work is likely to be a crossroad of various cultural values, and the challenge of socialization into, and the formation of an appropriate organizational culture becomes more significant than ever before. In order to fully appreciate the process of adaptation that takes place, one needs to understand the concept of culture, which is at the centre of this discussion.

2.2.1. Culture.

There are numerous definitions of culture, but consensus concerning the topic has yet to be reached. Gudykunst (1991) suggests that culture can be seen as anything that is human made, or as a system of shared meanings. Cox (1993) defines culture as "the system of values, beliefs, shared meanings, norms and traditions that distinguish one group of people from another." (p. 161).

Furthermore, Borden (1991), suggests that culture should be considered from both a psychological and physical perspective. From the physical aspect, culture is something within which we live and which influences our lives in ways of which we are unaware. However, the fact that we become aware of our culture when we change from one culture to another, indicates that culture is also psychological (Borden, 1991).

In this thesis, the definition provided by Hofstede (1991) will be used as a point of departure. Hofstede suggests that culture consists of the patterns of thinking, feeling and acting that are

learned throughout an individual's lifetime. Hofstede compares this process with the way in which computers are programmed, by referring to the patterns of thinking, feeling and acting as "mental programmes" (Hofstede, 1991).

A further emphasis is made by Hofstede, where he discusses the sources of one's "mental programmes" as lying within the social environment in which the individual grows and matures. Thus, culture is learned, not inherited, and therefore it is possible to "learn" a new culture. However, once the patterns of thinking, feeling and acting have established themselves, the individual must unlearn those patterns before being able to adopt new "mental programmes". Hofstede suggests that this unlearning is often more difficult than the initial learning process.

In addition to this, culture is always a collective phenomenon, because it is, to some extent, shared by other people within the same social environment. Hofstede (1991) asserts that culture is "the collective programming of the mind which distinguishes the members of one group or category of people from another." (p. 5)

Finally, culture must be distinguished from human nature, which is common to all human beings, and personality, which is the unique mental programme which is not shared with other individuals.

2.2.2. Organizational culture.

Organizational culture has received recent attention because of the impact of organizational culture on behaviour in organizations.

In line with his previous definition, Cox (1993) defines organizational culture as the "underlying values, beliefs and principles that serve as a foundation for the organization's management

system, as well as the set of management practices and behaviours that both exemplify and reinforce those principles." (p. 161).

Following the definition of culture put forward by Hofstede, organizational culture may be defined as the shared "mental software" of the people in an organization. The organization is the social environment from which the members receive the "mental programming" (Hofstede, 1991). However, Hofstede highlights the difference between what he calls a "national culture" (the culture of one's country), "regional, ethnic or religious culture" (the culture of different regions, ethnic or religious groups) and "organizational culture". Hofstede emphasises the difference as follows:

An organization is a social system of a different nature than a nation: if only because the organization's members usually had a certain influence in their decision to join it, are only involved in it during working hours, and may one day leave it. (p. 18)

Cox (1993) suggests that organizational culture can be described and compared along two dimensions: content and strength.

Content of organizational cultures.

The content of a culture refers to the specific values, norms and styles that characterize the organization. Schein (1971) in Cox (1993) distinguishes between relevant and pivotal norms. Relevant norms are those which are desired but not binding, while pivotal norms are those which are vital for survival in the organization. Schein suggests that differences concerning the relevant norms will cause far less conflict than differences surrounding pivotal norms.

In relation to the cockpit, certain norms associated with the appropriate behaviour of individual crew members may be considered as relevant norms, while adherence to safety and standard operating procedures are seen as pivotal.

Strength of organizational culture.

Culture strength refers to the extent to which norms and values are clearly defined and enforced. Where there is a strong culture, there are cues on how to behave, more reinforcement concerning what behaviour is acceptable, and higher penalties for nonconformity (Cox, 1993).

Mischel (1977) in Cox (1993) suggests that in a strong culture, everyone understands a situation in a similar way. There are uniform expectancies and a uniform response. By contrast, Cox suggests that weak organizational cultures provide less direction and less approval for appropriate behaviours:

When organizational culture does not provide a strong sense of how to behave, people invoke their own identities for modes of behaving. Thus one implication of this definition of weak culture is that people with different perspectives, norms, and values can more easily enact them. On the other hand, low enforcement may mean that even essential values are not shared by members, and the extreme of weak culture is organizational chaos. (p. 163)

After combining the two characteristics of strength and content, Cox and Finley-Nickelson (1991) have put forward two types of strong organizational cultures. The first culture is one where the range of norms and values is restricted and the organization exerts extreme pressure towards conformity to core or pivotal values, but not so much to more nonessential values. In the second type of strong culture, conformity to a wide range of behaviours is expected. This may be seen as a conformity not only to relevant but also to pivotal norms. Cox and Finley-Nickelson (1991) cited in Cox (1993) suggest that the former type of strong culture is more suitable to diverse organizations. This is because it is less prescriptive and allows for an expression of difference in areas which are not critical for organizational outcomes. The findings of this research show that the culture of SAA generally, and the flight deck specifically, is a relatively strong culture. There are definite cues on how to behave and particular penalties for nonconformity. In addition to this, all crew members seem to understand situations in a similar way. However, SAA seems to be encouraging conformity to a wide range of both relevant and pivotal norms, perhaps thereby allowing for less expression of difference under a culturally diverse climate.

Factors Affecting Intercultural Communication		
<u>Individual Factors</u>	<u>Group Factors</u>	<u>Organizational Factors</u>
Language Group identity Stereotypes Attitudes Expectations	Cultural differences	Socialization and Adaptation Acculturation Integration

Figure 3. Factors Affecting Intercultural Communication.

2.2.3. Individual factors affecting intercultural communication.

2.2.3.1. Language competence.

Communication difficulties are very often a result of an insufficient command of a language. More specifically variations in pronunciation and usage of English have long been a point of concern in air-traffic control. Prosodic aspects of language such as stress and differences in intonation may lead to misunderstandings (Berry, Poortinga, Segall & Dasen, 1992, p. 341).

Communication competence, however, involves more than simply correct pronunciation. Communication involves the exchange of messages and the creation of meaning. However, no two people ever attach the same meaning to a message. Whether communication is effective or not depends on the degree to which participants attach similar meanings to the message exchanged. Thus, communication is effective to the extent that individuals are able to minimize misunderstandings.

Misunderstandings can occur for a number of reasons when individuals communicate with culturally different people. Messages may not be encoded in a way that is understood by others,

messages may be misinterpreted, or both may occur simultaneously. Communication will be influenced by the degree of familiarity with the other person as well as that person's native language. Generally speaking, "...the greater our cultural and linguistic knowledge, and the more our beliefs overlap with the strangers with whom we communicate, the less the likelihood there will be misunderstandings". (Gudykunst, 1991, p. 24).

2.2.3.2. Group identity.

Group identity is important for the understanding of human behaviour in organizations because the group identities of individuals are significant in interpersonal relations and because transactions between individuals are to some extent, intergroup events (Alderfer & Smith, 1982, in Cox, 1993).

Two particular types of group identities have been found to be salient in human behaviour. These are phenotype identity and culture identity. Phenotype identities are visible. They are distinguished according to things such as hair texture, skin colour and facial features. Initial impressions and predispositions towards people are greatly influenced by phenotype identities. Furthermore, phenotype identities often activate prejudices and stereotypes. This is because individuals automatically rely on the expectations and assumptions concerning these identities, which may induce individuals to interact with members of that identity in particular ways (Cox, 1993).

With regard to phenotype identities, research has shown that skin colour plays a definite role in majority-minority relations as well as dynamics in the small group. This is a result of the stereotypes and attitudes immediately conjured up when identifying an individual with a particular group (Davis, 1985; Lincoln, 1967 & Triandis, 1976, in Cox, 1993).

In turn, this is likely to affect communication, since stereotypes and attitudes will impinge on interpersonal relationships. For example, where stereotypes based on phenotype identity impinge on the interpersonal relationships between crew members on the flight deck, they are likely to contaminate communication. This may occur in the form of defensive, aggressive or submissive communication.

Culture identity groups. The culture identity is based on sociocultural factors. Members of the culture identity group tend to share similar worldviews as well as similar norms and values (Cox, 1993). In situations where individuals need to identify with a second culture, as when entering an organization, individuals may feel that a part of their identity is sacrificed in order to hold on to a job. This is the price that many minority group members pay. For persons who identify very highly with their culture, putting their norms and values aside in favour of those of the dominant organizational culture is more difficult than for those who have a weaker identification with their culture (Cox, 1993).

2.2.3.3. Stereotyping.

Stereotyping is defined by Cox (1993) as "a process by which individuals are viewed as members of groups and the information that we have stored in our minds about the group is ascribed to the individual." (p. 88). The emphasis is on the process of group identity categorization and on the assumed traits of those categories. Individuals are usually categorized on the basis of some physical characteristics such as sex or ethnicity. A set of attributes is ascribed to all members of that group and there is an assumption that the members are all similar to each other. A difference between prejudice and stereotypes is that while prejudice may even increase with further contact, stereotypes will normally diminish as contact increases (Cox, 1993).

The utility of stereotyping can be seen in its use for coping with ambiguity and anxiety. In unfamiliar situations individuals reduce their anxiety by means of the familiarity which stereotypes provide (Rens, 1991). Furthermore, stereotypes simplify the world and make perceptual and cognitive processes more efficient. However, stereotypes are often inaccurate and it cannot be assumed that every individual is a characteristic member of the group on which the stereotype is based.

Within the context of diversity, knowledge of differences, as opposed to stereotyping, relies on knowledge which is gathered from reliable sources, and acknowledges that intergroup variation exists. The contrast occurs where stereotypes not only acknowledge differences, but also evaluates them. Stereotypes therefore have "built-in negative connotations." (Cox, 1993, p. 91).

Gudykunst (1983) suggests that four generalizations can be made concerning the process of stereotyping. First, is the tendency to overestimate the correlation between group membership and psychological attributes. Second, stereotypes influence the way information is processed. Favourable information is remembered about one's own group, but unfavourable information is remembered about outgroups. This will affect the interpretation of messages from members of ingroups and outgroups. Third, stereotypes create expectations about how members of other groups should behave. There is a general assumption that our expectations are correct, and therefore, individuals will try to confirm their expectations in communication. Fourth, is the idea that stereotypes constrain patterns of communication. Behaviours are seen to confirm stereotypes even when they do not.

In interracial and interethnic situations, there are frequently mutual suspicions between groups. Suspicion is also heightened by feelings of mistrust, where, because contact is limited, people

selectively perceive racial and ethnic groups that differ from their own. The result is mutual distrust. However, mistrust is often based on negative and incorrect stereotypes.

Stereotypes can impact on the careers of culturally diverse individuals in several ways. Stereotyping can affect the level of social status that individuals are afforded. For instance, status is often attached to organizational roles such as the level of authority in a chain of command. However, attributes based on gender, race, ethnicity and even age form the basis of assumptions made about a person's ability and value. Thus, someone of a majority group (the minority in South Africa) might be afforded higher social status than an individual of a lower status group (Cox, 1993).

Stereotypes also impact on the evaluation of performance in organizations. Due to preconceptions about ability and effort, different performance attributions may result for majority and minority groups. Stereotypes may also influence the distribution of power in the organization for the same reason alluded to above. Preconceptions about the ability and suitability of members of different culture groups may limit opportunities to serve in positions of high authority. In the same way, members of minority groups may find it difficult to influence decision-making processes in organizations.

Members of different culture groups may find that their career-development opportunities may be negatively affected by stereotyping. The belief that culturally different individuals lack the capacity or will to learn new techniques or technologies will inhibit career development.

If stereotyping is allowed to negatively influence the career opportunities of minority groups in an organization such as SAA, it is likely to foster negative attitudes and intergroup conflict. This is likely to infiltrate the cockpit and in turn damage the vital communication process on the flight deck.

2.2.3.4. Attitudes.

The most far-reaching attitude affecting communication is prejudice. Prejudice involves a prejudgement of an individual based on that person's membership in a group. Furthermore, it may be seen as a positive or negative predisposition toward another individual (Brislin, 1981). It is useful to think of prejudice as a continuum ranging from low to high, suggesting that we are all prejudiced to some degree. Even people with low prejudice, however, often prefer to interact with people who are similar to them, because such interaction is more comfortable and less stressful (Gudykunst, 1983).

Cook (1978) in Gudykunst and Ting Toomey (1988) put forward five conditions which must exist in order for prejudice to be reduced: Individuals should have equal status; negative outgroup stereotypes should be disconfirmed; cooperation should exist; the situation should have high "acquaintance potential"; there should be a supportive social climate.

Regarding attitudes in general, Gudykunst (1991) highlights seven characteristics which the contact situation must have for a positive change to occur. These characteristics include maximum cooperation and minimum competition; equal status within and outside of the contact situation; similarity of members on non-status dimensions; avoidance of differences in competence; strong institutional support for the contact; the potential for the contact to extend beyond the immediate situation; and voluntary contact between equal numbers of ingroup and outgroup members.

Under these circumstances, several changes may take place. Changes towards a group as a whole occur as a result of positive experiences with individual members. Our perceptions of outgroups may become more complex. Instead of seeing the outgroup as a homogeneous group, the individual realizes that variability can occur among group members. Although attitudes towards

the group as a whole may not occur, stereotypes will be differentiated amongst "sub-categories" of the group as a whole. Finally, decategorization may occur. With increased contact with members of an outgroup, individuals gradually stop using group membership as a basis for identifying or classifying individuals.

2.2.3.5. Expectations.

Expectation has to do with our anticipation and prediction about how others will communicate with us (Gudykunst, 1991). Expectations are derived from social norms, rules concerning communication and personal characteristics. Furthermore, expectations predominantly emerge from the intergroup attitudes and stereotypes that we hold. Attitudes and stereotypes become more significant in our expectations when we are unfamiliar with the people with whom we are communicating. Gudykunst (1991) suggests that expectations are culturally based:

There is a 'should' component to most of our expectations. We develop expectations about each other's behaviour, not only in the sense that they are able to predict the regularities, but also in the sense that they develop preferences about how others should behave under certain circumstances. Our culture and ethnicity provide guidelines for appropriate behaviour and the expectation we use in judging competent communication. The problem is that norms for certain behaviours vary across cultures and subcultures within a culture. (p. 61)

Communication with strangers is usually based on negative expectations. Actual, or even anticipated interaction with a member of a different culture leads to some anxiety in the individual. Four types of negative consequences may result from interacting with strangers. First is our fear for our self-concepts. For example Gudykunst suggests that:

In interacting with strangers, we worry about feeling incompetent, confused and not in control, we anticipate discomfort, frustration and irritation due to the awkwardness of intergroup interactions. We also may fear the loss of self-esteem, that our social identities will be threatened, and that we feel guilty if we behave in ways that offend strangers. (p. 64)

Second, we may fear negative behavioural consequences from communicating with strangers. We may fear exploitation, being taken advantage of, or fear domination by others. Third, we may

fear negative evaluation by others in terms of rejection, ridicule, disapproval and being stereotyped negatively. Finally, we may fear negative evaluation by members of our own cultural or ethnic group. We fear that members of our ingroup will reject us, sanction us or identify us with the outgroup (Gudykunst, 1991).

2.2.4. Group and intergroup factors affecting intercultural communication.

2.2.4.1. Cultural differences.

The majority of group level factors hinge on various cultural differences. Cultural differences usually occur along the following dimensions: individualism versus collectivism, uncertainty reduction, power distance, leadership style, competitive versus cooperative behaviour, communication styles and information processing.

Cultures vary in terms of world view, beliefs, values, norms and their communication patterns. Specifically, cultures vary along the lines of language and verbal behaviour, nonverbal behaviours including sitting, standing, gestures, postures, tones of voice, facial expressions and the way of handling time, space and material (Kim, 1988).

Although such cultural differences play an overt role in the communication process, the impact is often underestimated by participants in the communication process. In the context of communication between Black and White, cultural differences are often ignored. This occurs due to the participant's belief that they are operating according to similar speech and cultural conventions and that they are the conventions which the socially dominant white group has established as standard (Kochman, 1981).

In order to address the problems inherent to intercultural communication, there must first be a perception that differences exist. This principle of difference implies that people do not automatically share the same norms, thought patterns, structures and systems and at the same time explains communication difficulties.

Individualism versus collectivism.

The most researched area of cultural differences seems to be in the area of individualism - collectivism. Individualism may be seen as the tendency to give priority to the goals of the individual. While collectivism gives priority to the goals of the collective. (Triandis, Betancourt, Iwao, Leung, Salazar, Setiadi, Sindha, Tousard & Zaledski, 1993; Gudykunst & Ting-Toomey, 1988).

Collectivists "place greater emphasis on the needs and goals of the group, social norms and duty, and cooperation behaviours." (Cox, 1993, p. 113). Collectivists are also more likely to sacrifice their personal goals for the attainment of group goals. They also seem to have a stronger family orientation and are more satisfied with team-based rewards. Hofstede's (1991) research shows that the United States, Britain, New Zealand and Australia are at the upper end of the individualism scale, while West African, Latino and Asian countries fall lower on the scale. Most Black Americans are descendants of the West African tribes. Therefore, most of the racioethnic minority groups have historical roots in collectivist cultural traditions.

The link between individualism-collectivism and its relevance to the organization is easily identified. In individualist cultures, employees are expected to act according to their own interest and work should be organized so that the employees and the employers interests coincide. In the collectivist culture, the employer will tend to hire not just an individual, but someone who is part of an ingroup. The employee will be expected to always act in accordance with this

ingroup, which may not always coincide with the individual's interests. Thus, self-effacement in the interest of the ingroup is expected and encouraged (Hofstede, 1991).

Furthermore, although organizations often encourage the establishment of teamwork, the organizational reward systems are still of an individualistic nature. Cox (1993) mentions that:

Although I have found dissatisfaction about the failure of organizations to emphasize teamwork among workers of all identities, work organized in a way that emphasizes the individual contributor is likely to be least satisfying for members from Asian, African, Hispanic or American Indian backgrounds. (p. 115).

In the workplace of a collectivist society, the workplace itself may become an ingroup. In such circumstances, the workplace resembles a family where there are mutual obligations of protection in exchange for loyalty. By contrast, in individualistic societies we find that the relationship between employee and employer is purely a business transaction (Hofstede, 1991).

With regard to aviation, it is suggested that the cockpit must tend towards a collectivistic approach. Group goals, norms and cooperative behaviours and communication must take precedence over individualistic tendencies. Furthermore, the line pilots (including the Flight Engineers) become an ingroup. This is a collectivistic tendency. Theory suggests that Africans and Asians are more collectivistic than traditional Western societies.

Therefore, Black pilots in SAA contribute to the collectivistic nature of the flight crew. In the past, there has been an emphasis on individualistic tendencies. A concerted effort has been made to change this to a more collectivistic approach in order to improve communication and interaction in the flight crew where individual leadership and initiative are highly valued (Foushee & Helmreich, 1988; Johnston, 1992).

Uncertainty avoidance.

Uncertainty avoidance is defined as "the extent to which the members of a culture feel threatened by uncertain or unknown situations." (Hofstede, 1993, p. 113).

Uncertainty creates anxiety and different cultures may develop unique ways of alleviating this anxiety. Feelings of uncertainty are not only experienced by individuals, but are to some extent shared by other members of the society (Borden, 1991; Gudykunst & Hammer, 1988; Hofstede, 1991). Feelings of anxiety are acquired and learned along with other dimensions of the culture. Hofstede (1991) emphasizes the following:

Those feelings and the ways of coping with them belong to the cultural heritage of societies and are transferred and reinforced through basic institutions like the family, school and state. They are reflected in the collectively held values of the members of a particular society. They lead to collective patterns of behaviour in one society which may seem aberrant and incomprehensible to members of other societies. (p. 111)

In cultures which are high in uncertainty avoidance, there is a lower tolerance for ambiguity and uncertainty. This is expressed in higher levels of anxiety and energy release, a greater need for formal rules and less tolerance for deviance. Thus, in an attempt to prevent uncertainties in the behaviour of people, societies may develop laws and rules controlling the rights and duties of employees and employers (Hofstede, 1991; Gudykunst, Gao, Schmidt, Nishida, Bond, Wang and Barraclough, 1992).

Low uncertainty avoiding cultures, by contrast, have lower stress levels and are more likely to take risks in the face of uncertainty. Hofstede (1991) suggests that the need for rules and regulations does not stem from "formal logic", but rather from "psycho logic".

The need for rules in a society with a strong uncertainty avoidance culture is emotional. People - members of governments, civil servants, employers and employees - have been programmed since their early childhood to feel comfortable in structured environments. As little as possible should be left to chance. (Hofstede, 1991, p. 121).

Borden (1991) points out that:

To bring structure into one's life is to bring a sense of security i.e., to avoid some of the uncertainties. We know what to do, how to do it, and when to do it, or we know something or someone that will tell us. (p. 121)

Latin American, Latin European and Mediterranean countries as well as Japan and South Korea have high scores on the uncertainty avoidance scale. Austria, Germany and Switzerland have medium scores. Asian countries and African countries fall lower on the scale (Hofstede, 1993). When relating these concepts to the cockpit situation, it is found that on the flight deck, there are very strict rules and regulations, perhaps indicating an inclination towards high uncertainty avoidance.

Dodd (1987) emphasizes that all communication relationships have some ambiguity and that within our own cultures, the ambiguity is lessened by some standard areas of predictability. However, interaction with someone from another culture means that we do not necessarily share the same communication rules, and as a result, the ambiguity increases. The need for an area of predictability therefore is strengthened. On the flight deck, Standard Operating Procedures (SOPs) in the cockpit provide this area of predictability.

One can suggest that the flight crew will be very high in uncertainty avoidance because of the emphasis on safety. Asian and African members who fall low in the uncertainty avoidance scale may contribute towards communication and interaction problems with regard to standard rules and regulations. Johnston (1992) verifies this:

High UAI (Uncertainty avoidance) tend to generate rigidity and strong adherence to rules and regulations. This could manifest itself in a preference for clear guidance and a belief in the merits of explicitly controlling subordinates. Alternatively, low UAI could conceivably be associated with a permissive and indulgent approach to rules and standard operating procedures. (Johnston, 1992, p. 15).

Power distance.

Hofstede (1991) defines power distance as the "extent to which the less powerful members of institutions and organizations within a country expect and accept that power is distributed unequally." (p. 28). In situations where there is large power distance, superiors and subordinates consider each other as essentially unequal. Hofstede (1991) describes the large power distance organization as such:

Organizations centralize power as much as possible in a few hands. Subordinates are expected to be told what to do. There are a lot of supervisory personnel, structured into tall hierarchies of people reporting to each other. Salary systems show wide gaps between top and bottom in the organization. Superiors are entitled to privileges (private laws) and contacts between superiors and subordinates are supposed to be initiated by the superiors only. (p. 36).

By contrast, in the small power distance organization, subordinates and superiors consider each other as essentially equal. The hierarchy of such organizations is seen mostly as an inequality of roles, which may be changed at any time. Such organizations are decentralized, with flat hierarchical pyramids and there is a limited number of supervisory personnel (Borden, 1991; Hofstede, 1991).

The flight crew may be considered as being high in power distance. This is because of the significant difference in terms of status between members. Johnston (1992) acknowledges that in high power distance countries junior crew members are likely to fear the consequences of disagreeing with Captains. "Leaders are themselves likely to feel comfortable with paternalistic behaviour and leadership by directive. Leaders, rather than followers tend to initiate communication." (p. 15).

The importance of Hofstede's dimensions for aviation is supported by research findings. These findings are reported by Johnston (1992). Redding and Ogilvie (1984) cited in Johnston, set out to determine the influence of hierarchy on the "openness of the communication process in the

cockpit." (p. 17). In their investigation of six airlines drawn from Europe, North America, Asia and the Pacific, they found that the status consciousness that one would expect in high power distance cultures, does in fact exist in the cockpit. Furthermore, where there was a lower power-distance tendency towards egalitarianism, status was not perceived as a barrier to communication. Redding and Ogilvie concludes that there is some evidence that societal values about the distribution of power do infiltrate the cockpit, and that they influence the climate in which communication takes place.

Competitive versus cooperative behaviour.

Members of different cultural orientations have been found to differ with regard to competitive or cooperative orientation towards interactions and the performance of tasks. Research provides evidence that Anglo American men tend to be highly competitive in social interaction and task performance. By contrast, Mexican Americans, African Americans, and Chinese Americans adopt a more cooperative approach (Cox, 1993).

With regard to organizations, competitive-cooperative orientations may affect organizational behaviour in the use of ranking systems for promotion. In these systems, individuals are judged according to the extent to which they stand out from others. This approach generally fosters individualistic competition and as a result, many cultures feel uncomfortable with this system. The data of this research suggests that a cooperative orientation will facilitate communication in the cockpit, while competitive behaviour works directly against effective communication between members.

Direct versus indirect style of communication. The direct verbal style refers to the extent to which speakers reveal intentions through explicit verbal communication, while the indirect verbal style refers to messages which conceal the real intentions of the speaker. Gudykunst and Ting-

Toomey illustrate the differences and the roots of these differences through an analysis of Koreans and North Americans. The importance of preserving group harmony is one of the reasons why the collectivistic Koreans tend to use the indirect style of communicating. Their preference for indirect style also fulfils the face-honoring process where respect for another's selfhood is highly valued.

On the other hand, the North American people prefer direct verbal expressions. This stems from the individualistic value which fosters the norms of honesty and openness. This is achieved through precise, straightforward communication (Gudykunst & Ting-Toomey, 1988).

The findings of the research show that the flight deck requires straightforward, precise communication correlated with the direct style. Use of an indirect style of communication is likely to result in confusion and misunderstanding.

Information processing.

Information processing depends upon two points of discussion. These center around the issues of monochronic versus polychronic orientation, and high versus low-context communication. Both of these factors will impact on the information processing procedure of the respective individuals.

People following the monochronic orientation tend to do things one at a time. They have a high need for closure, in other words, completing a task or coming to a conclusion. As a result, their tolerance for ambiguity is lower. Where there is uncertainty, monochronics tend to articulate solutions and work towards conclusions. Furthermore, monochronics tend to think in linear fashion, they internally process information in a segmented, sequential fashion. American, British, Canadian and German cultures are largely monochronic oriented.

Polychronic oriented cultures tend to think about and do a number of things simultaneously. They are more likely to suffer from information overload and often experience procrastination. Polychronic cultures are likely to experience difficulties in situations that demand a monochronic orientation to information processing.

In such situations, the polychronic individual is likely to experience stress and depression in the group. Latin American, African, Middle Eastern and Southern European cultures tend to be polychronic. However, although some cultures are largely monochronic or polychronic, there is a wide margin for individual variation along these dimensions (Dodd, 1982).

The flight crew will depend on monochronic orientation. Standard procedures require that crew members complete one task before continuing to the next. Polychronic individuals may find it difficult to adapt to this orientation to information processing.

High versus low context cultures

This refers to the extent to which cultures expect individuals to know when and how to respond to situations without having to explain. In other words, some cultures are high in providing members with information concerning routines and rituals and how to behave in common situations. On the other hand some cultures do not explicitly provide this information and expect members to be aware of it. The culture in which information is seldom provided is a high-context culture, whereas in the low-context culture, information is plentiful and expectations for behaviour are explicitly explained.

Difficulty arises in the communication situation where one individual is operating from a high-context mind-set, while the other expects explanation, a low-context mind-set. Whereas North Americans, Western and Northern Europeans tend to be on the low-context side, Middle

Easterners, Africans and Latin Americans tend towards the middle. Japanese, Chinese, Southeast Asians, Indonesians, Micronesians and Indians tend toward high-context communication (Dodd, 1982).

2.2.5. Organizational factors affecting intercultural communication.

The concept of organizational culture has been discussed at the beginning of this section. The purpose here is to explore the process of adaptation that takes place when entering an organization. There are several processes related to organizational culture: socialization and adaptation, acculturation, and integration.

2.2.5.1. Socialization and adaptation.

Schein (1990) suggests that culture perpetuates and reproduces itself through the socialization of new members entering the culture. This socialization process may begin with the selection of individuals who already have the correct set of assumptions, beliefs and values. Under these circumstances, less formal socialization will have to take place. Most often, however, individuals need to be trained and acculturated.

Organizational socialization is the process of conveying organizational goals, norms, and behavioural patterns to members. It is through this process that individuals come to understand the values, abilities and expected behaviours necessary for assuming organizational roles or participating as an accepted member (Cox, 1993; Schein, 1990).

Whenever interaction results in the shaping or selection of socially approved behaviour, socialization occurs:

Typically, it involves rewarding approved behaviour and punishing unwanted behaviour. This, too serves to lessen the probability of future occurrences of socially disapproved responses. (Segall, Dasen, Berry & Poortinga, 1992, p. 23)

Furthermore, the aim of socialization is "to establish a basis of attitudes, habits, and values that foster cooperation, integrity and communication". (Pascale, 1984, p. 37). During the process of socialization, adaptation takes place. With regard to this adaptation, Gūdykunst (1983) puts forward a number of laws of interaction and adaptation.

- When nonfunctional adaptive behaviour occurs, culture-based belief differences will come into effect.
- When participants share a purpose requiring equal cooperation, they will display equity in communication style adaptation.
- When the setting favours one participant, the less-favoured will display more adaptive behaviour than the more favoured.
- When the initiator of a contact has the advantage in status or power, the respondent will assume the greater burden of adaptive behaviour.
- The more functional adaptive behaviour an individual engages in, the more change will occur in his or her culture-based beliefs.

Finally with regard to adaptation, Kim (1988) suggests that in order to understand the cross-cultural adaptation process, both the macro and micro environments need to be examined. One must consider the extent to which the environment is receptive to new members as well as the extent to which that environment exerts pressure on new members to conform.

2.2.5.2. Acculturation.

Acculturation is the process of learning and acquiring the elements of the host culture (Kim, 1988). Furthermore, this is the process for resolving cultural differences and of cultural change

and adaptation between groups, especially when one group is being merged into a larger, more dominant group (Cox, 1993).

Cox (1993) inferred the following:

It is possible to think of the parties to a cultural "merger" as being the organizational culture and the cultural backgrounds of its entering employees. (p. 166)

However, there is usually a dominant culture group in organizations (Cox, 1993; Holt & Keats, 1992). In South Africa, this is comprised of White, male South Africans. In this context, acculturation entails a process of unlearning old cultural patterns, while acquiring new ones (Kim, 1988; Rens, 1991).

In this dynamic interplay of acculturation and deculturation, strangers gradually undergo an adaptive transformation in their communication system. Ultimately the new cultural patterns replace many of the old patterns and the overall transformation of strangers becomes noticeable, particularly to others. (Kim, 1988, p. 53)

There are several strategies for handling intercultural relationships during the acculturation process. Four types of acculturation processes have been described by Cox and Finley-Nickelson (1991) in Cox (1993). These are 1) assimilation, 2) separation, 3) deculturation and 4) pluralism. Assimilation is a one-way adaptation where the organization's culture becomes the standard behaviour to which all entering members must adapt. The purpose of assimilation is to eliminate cultural differences. To accomplish this, culturally different members must reject or repress norms, values and practices of their own culture (Cox, 1993).

Separation refers to the situation where entering members are unwilling or unable to adapt to the organizational culture, and thus separate themselves from it. Separation is observed in organizations where members of minority cultural groups are segregated into certain job categories.

Deculturation occurs when the cultural identity of members is only vaguely defined:

This may occur with minority group members who have severed ties with their original sociocultural group but have not been successful in forming new ties with the dominant culture or have been rejected by it. In the organizational context, deculturation is inconsistent with the notion of strong organizational culture. (Cox, 1993, p. 167).

Pluralism refers to the two-way learning and adaptation that takes place when both the organization and entering members from various cultural backgrounds change to accommodate the

- norms and values of others.

Pluralism emphasizes interdependence and mutual appreciation among cultures and the importance of preservation of microculture group identity. Moreover....pluralism is an acculturation process in which the entering members assimilate a limited number of core behaviors and values while preserving important differences along other dimensions. (Cox, 1993, p. 167).

2.2.5.3. Integration in organizations.

This section explores the extent to which group identities such as racioethnicity, gender and nationality may impact on participation in informal groups. Holt and Keats (1992) state that:

In modern multicultural environments interaction takes place on two levels. At one level, minority cultural groups interact over time with a dominant, majority, cultural community group. At the second level, multicultural interaction involves a situation where a number of work value systems compete for acceptance or incorporation into an individual's personal structure of work-related cognitions. In such multicultural contexts, it is likely that the influence of the dominant cultural group's cognitions about work would be greater on the minority ethnic individual, than the same cognitions from the individual's own ethnic group. (p. 423).

Research has shown that participation in informal groups is influenced by factors such as common language, perceived social similarity and ethnocentrism. Cox (1993) suggests that social networks are important vehicles for communication and integration in organizations. However, where members of a social system have historically been concentrated in one cultural group, it becomes difficult for members of other cultural groups to join and fully utilize informal groups.

Sociocultural homogeneity makes relationships more predictable and facilitates communication. Therefore, one may expect a preference for interacting with members of one's own cultural group, particularly in the informal context. We know that this preference is also true for minority group members in the tendency for members of these groups to take meals together and form support groups.

Socialization, acculturation and integration are important for communication on the flight deck for various reasons: Firstly, acculturation is necessary before effective communication can take place because of the misunderstanding and confusion which occurs when members are unsure of the prevailing norms and roles. Secondly, members must adopt appropriate ways of behaving since this may impact on the stereotypes and attitudes held by fellow crew members. This in turn impacts on communication.

Thirdly, new members must adapt to the technical aspects of the cockpit. Where crew members are not proficient in technical aspects, negative expectations and stereotypes may be reinforced. Furthermore, technical mistakes, apart from placing the flight in danger, can lead to miscommunication and misunderstanding of problematic situations.

2.2.6. Summary.

- At the individual level, the attitudes towards and stereotyping of crew members may affect the communication process and the climate in which communication takes place. Mutual suspicion and mistrust may influence communication on the flight deck and as a result, interaction may remain rigid and superficial. However, stereotypes may be modified and reevaluated as a result of increased contact.
- Certain expectations may prevail amongst crew members, based on previous experience, and

- perhaps fostered by historical, social and political surroundings. Such expectations may result in selective perception, leading to increased misunderstanding and misinterpretation.
- Differences in language proficiency, pronunciation and intonation can lead to misunderstanding on the flight deck. This may be particularly hazardous during the checklist procedures.
 - At the group level, cultural differences, in various areas, may affect the communication and interaction on the flight deck. In particular, cultural differences may impact on the particular communication styles used by crew members.
 - Since Asians and Blacks are considered to be more collectivist than Whites, it is likely that Black pilots will approach group functioning from a more collectivist perspective. This may enhance team work on the flight deck.
 - The strict ranking and role structure on the flight deck may indicate a high power distance. White crew members may place more emphasis on rank and status differences, whereas Black pilots may be less concerned with these aspects.
 - At the organizational level we may find that new members to the organization must adapt to the organization. Whether or not this adaptation takes place, as well as the way in which it takes place, may alter communication patterns, and the climate in which communication occurs.
 - Social interaction and socialization may contribute to greater understanding of cultural differences.

CHAPTER 3

THE STUDY

3.1. THE RESEARCH OBJECTIVES.

The aim of this study was to provide a contextual analysis of intercultural communication in the context of the small group. The small group under observation in this study was the flight crew. In particular, this small group was observed in a specific environment, that being the flight deck or cockpit.

Specifically, this study aimed to determine which individual, group and organizational factors impacted on communication and interaction between culturally diverse individuals on the flight deck. An additional aim was to explore the process of acculturation and adaptation, and the extent to which acculturation and adaptation took place between White and Black pilots, and between the organization as a whole and the group of Black candidates. At the same time, attention was paid to the prevailing climate in which communication took place, that is, the recent political changes and the implementation of Affirmative Action policies.

3.2 THE ORGANIZATIONAL AND HISTORICAL CONTEXT.

South African Airways is a commercial airline employing approximately 591 pilots, 1750 cabin crew, 1858 engineering ground staff and 1291 administration and support staff. Historically, South African Airways employed only White, male pilots, with the exception of four White female pilots. These employees entered the organization with the minimum requirement of a commercial pilot's licence, an instrument rating and approximately 1500 hours of flying experience.

Although Black employees have been a part of SAA in areas such as cabin crew, engineering ground staff and administration and support staff, Black pilots have only recently been included in the pilot section.

The recent move towards Affirmative Action and a more culturally diverse "pilot pool" resulted in a situation where culturally diverse pilots were expected to continue to interact and communicate effectively on the flight deck. However, the transition did occur without difficulty. Cultural differences along the dimensions outlined in Chapter Two were known to impact on interaction and communication between individuals.

The first Black pilots were employed by South African Airways in January 1994, four months before the data for this research was collected. At the time that the data was collected, the Black pilots were completing their training as relief pilots, and were about to commence training as First Officers. Data collection took place over a period of six months. It is significant that the study took place shortly after an election in which Black citizens were allowed to vote for the first time, and where, as a result of this election, a democratically elected government came into power. These political changes were paralleled by a broader openness to cultural and racial issues by the population at large and by organizations in particular.

3.3. THE METHOD.

The study involved a qualitative investigation of intercultural communication on the flight deck, using a multi-method and interactive approach to interpreting and explicating the communication dynamics in the cockpit. This method was justified by the idea of triangulation, which involves a "combination of methodologies in the study of the same phenomenon" (Jick, in Van Maanen, 1983).

Essentially, this approach involved gaining access to five culturally diverse flight crews; obtaining audio-video recordings of simulator sessions in which these crews took part; providing a preliminary analysis of the interactions according to theory; the viewing of critical incidents by the Captains and First Officers and the recording of their interpretations; the conducting of interviews relating to broad perceptions and experiences of cultural issues and communication; and the analysis of the data generated by this process to extract themes.

3.3.1. The sample.

Five culturally diverse crews were used in the study. Only five crews were involved, since at the time of the research, only five Black pilots were employed by South African Airways. Therefore the total population existing at the time of the study was utilized.

3.3.2. The data analysis.

The audio-videos of the simulator sessions were analysed by drawing on the methodology described by Craig (1988). This process followed four steps: 1) viewing of the tapes, 2) review of the tapes, 3) applying thick description 4) providing an explanatory account. A set of themes was extracted from the analysis of the video tapes as well as from the individual interviews which followed the analysis of the video tapes.

3.3.2.1. The audio-video recordings.

Viewing the tapes.

Craig (1988) suggests that the preliminary viewing of the tapes enables the analysts to "familiarize themselves with the data, to begin to ask questions about certain points of interest in the data, and to discuss emergent ideas about the data among each other." (p. 97). The

transcripts of the videos showed the verbal and non-verbal transactions between the Captain, First Officer and Flight Engineer on the flight deck. Where relevant, the context and the actions of the crew members were also indicated. (See appendix A). During this first step in the process of analysis, some speculation was made concerning the intentions of the subjects (Craig 1988).

Review of tapes.

In this second step in the process of analysis, an attempt was made to answer the question: "What does the data mean?" (Craig 1988). Craig suggests that "the review of tapes involves essentially the selection of illustrative extracts from the videotape. The extracts are selected in order to illustrate crucial aspects of the summary-in-mind regarding the (possible) intention behind actions and the meaning which may be imposed on the actions." (Craig, 1988. p. 98).

Craig (1988) at that point draws attention to the "uncertainty principle" which supports the idea that there is a need for continual discussion of "theory against data against theory" until one has achieved the most likely suggestion as to what the data meant. At this point, theory was tested against the data in a preliminary process of discarding inappropriate or irrelevant theory and exposing alternative channels of investigation. In this way, the meaning of the data was further illuminated.

Applying thick description.

Craig (1988) describes Geertz' use of the term "thick description":

The application of a coherent story to a 'bit' of data. It refers for him to the intellectual effort required to make sense of the bits and pieces of data (or information) which beg interpretation. The notion of thick description also emphasizes that the analyst must construct a coherent story of the data and that it is not the data which immediately and in richness equal a potential story. (p. 99).

Furthermore, Craig suggests that this thick description rests on questions concerning what the data means, what the intentions behind the bits of data are, what the context, goal and associated beliefs, practices and desires are that surround the bit of data.

The analysis contains a mixture of interpretative elements, that is, speculation about intentions and possible consequences of this, propositions about the meaning of actions and evaluations of appropriate goals in such a situation. (Craig, 1988, p. 100)

- Explanatory account.

The explanatory account was concerned with the coordination of the bits of data into an overall pattern. The methodology of this thesis follows a process which Craig (1988) suggests extends from an objective, through a phenomenological and into a generative account of behaviour.

The motivation behind extending a phenomenological account of behaviour into a generative account, hinges on the belief that an explication of the functional structures (the 'mechanism' in the black box) provides a sound basis for the analysis of intentional and meaningful action; a sound basis in that the explication of the generative mechanisms for behaviour provides a theoretical account of 'action' which is not dependent on the particular content of the actions. (Craig, 1988, p. 101).

Furthermore, in this process, there was an emphasis on the subjects' accounts of their actions.

Negotiation involved all parties to the research, including the subjects and the researcher.

Such negotiation may be regarded as a process of elaboration within a phenomenological level of analysis or a checking procedure for the validity of the analyst's proposed meaning(s) of the behaviour. (Craig, 1988, p. 101)

3.3.2.2. The interviews.

The analysis of the video tapes provided a basis for further interpretation of the data. In the individual interviews, critical incidents from the video tapes were shown to the subjects. The subjects were then asked to provide their interpretation of the actions portrayed in the video. The subjects themselves contributed to the generative level of analysis described above by playing an active role in the "explanatory account" step in the process of analyzing the video tapes.

The purpose behind this methodological move was threefold:

- 1) To clarify the researcher's own interpretations of the data. This was necessary because of the intricacies of the aviation context.
- 2) To expand upon the interpretations of the researcher, who might have omitted crucial aspects of the aviation environment, which in turn could impinge upon the interpretation of the data.
- 3) To compare the subject's interpretation of the data with that of the researcher, thereby providing an additional level of analysis.

Critical incidents were highlighted in the interview situation. The critical incident, in terms of this research is defined as an instance where the transactions between crew members showed misunderstanding, violation of norms, procedural problems, facilitative or inhibiting communication styles and general communicative problems such as interruption or talking over one another.

In addition to the highlighting of critical incidents, general questions supported the data collection process. These questions revolved around the areas of education and qualifications, abilities, general opinions concerning cultural diversity and aspects such as the prevalence of stereotypes and the acculturation process.

3.3.2.3. The extraction of themes.

The extraction of themes occurred on two levels: 1) the themes extracted from the interviews, and 2) the themes extracted from the video analysis. These themes were related to the theory surrounding these areas. The themes extracted from the interviews in particular were categorized, and discussed according to the three levels of analysis discussed in Chapter Two.

CHAPTER 4

RESULTS

The subjects involved in this study included four Black First Officers and one Asian First Officer in training, four White Captains and four White Flight Engineers. All the subjects were males. All the crews consisted of a White Captain, a Black or Asian First Officer and a White Flight Engineer. In each case, the Captain and Flight Engineer were middle aged and were well established within the organization, having been employed by SAA for a number of years. In some cases, the Captains were qualified as instructors and training Captains. This meant that they were involved with the training of new pilots and had some insight into the specific difficulties that a pilot in training would encounter. Where the Captains were training Captains, a slightly more pedantic attitude was evident. The specific details of the Black and Asian pilots are supplied below.

4.1. THE FIRST OFFICERS.

All the First Officers, except for one, spoke English as a second language. In terms of their formal flying training, all of the First Officers had a commercial pilot's licence and had an instrument rating with no less than a thousand flying hours. One pilot in particular, trained with Lufthanza and worked for Anglo America, another had completed his initial training in Israel, and another had completed most of his training with SAA itself. One of the First Officers also had an instructor's rating.

The emphasis in South African Airways was on the conversion of pilots onto particular aircraft types, rather than teaching pilots to fly. The expectation therefore was that trainees already possessed private pilot's licences and commercial pilot's licences and therefore required only conversion or training for a different aircraft.

All the subjects showed an above average education, most having graduated from private, multiracial schools. In addition to this, most of the subjects came from fairly affluent families, they were cabinet minister's sons and businessmen's sons. Furthermore, some subjects came from liberal, political families. For example, the family background of one of the subjects was described by a Captain as follows:

He came from a family background which I think was in the front line of the political movements at the time, not that I think that they were radical or anything like that, but they were certainly free thinkers, and also he went to a good multi-racial school, but a very strong Western and English private school type of outlook.

At the time this research was conducted, all the subjects had been trained as inflight relief pilots, and all the subjects, except for one who was already flying as a Copilot, were in training to become Copilots. The training for Copilots included jet theory, jet flying and cockpit management. Shortly after this research was conducted, all the candidates took part in Crew Management Training.

The sample was therefore very small and select. Their qualifications and level of experience were up to standard. These factors were of particular concern for White members who were already established in the organization. A Captain made this comment:

The problem is our sample is so small here. Our candidates are intelligent people and experienced people. But I could, I really could foresee a problem with say township background, low DET education, a dominant parent structure, and perhaps a marginal aviation background, low experience background, and I can foresee a problem there.

4.2. THE AUDIO-VIDEOS.

4.2.1. The critical incidents.

From the analysis of the videos of the crew interactions. (prior to crew interpretation) a number of critical incidents were extracted. These were the incorrect use of jargon such as the use of the word "off" instead of "disarm", procedural problems (where crew members did not follow the correct procedures), interruption by the Captain, misunderstanding and miscommunication such as misunderstanding commands or misunderstanding phrases such as "Are you happy to fly", overbearing communication style by the Captain, instructing and coaching roles played by the Captain, assertive and submissive behaviour by the Copilot, conversation outside the immediate situation (this included personal disclosure and conversation), communication by the Captain which invited input from other crew members and the offering or requesting of information by the Copilots. These incidents and their frequency are given in Table 1.

Additional information.

1. In Crew A and D the copilots are flying, this may explain the higher frequency of procedural problems, as well as the higher level of coaching and instructing behaviour on the part of the captain. In Crews B, C and E the captain does the flying.
2. The same captain is used in Crew A and Crew B. The differences between Crew A and B occur in the areas of procedural problems, overbearing communication and instructing and coaching behaviour. The higher level of incidents in these areas are primarily due to the fact that the inexperienced copilot is doing the flying.
3. The high level of interruption in Crew E seems to be due to the personality of the captain and does not occur across all 5 crews.

Table 1. The type and frequency of critical incidents regarding communication: Video tape data.

Critical Incidents	FREQUENCY OF OCCURRENCES				
	Crews				
	A	B	C	D	E
Incorrect use of jargon	2	2	1	2	0
Procedural problems	5	0	1	6	0
Interruption by captain	1	0	1	1	6
Miscommunication/misunderstanding	2	2	0	3	1
Overbearing communication style (by captain)	5	3	0	2	3
Instructing and coaching role (by captain)	11	3	3	10	5
Assertive behaviour (by copilot)	1	1	3	1	0
Submissive behaviour (by copilot)	0	1	0	1	0
Conversation outside of immediate task	0	0	8	0	0
Inviting input (by captain)	1	2	1	0	2
Offering/requesting of info (by copilot) outside procedures	6	5	6	5	6

4.2.2. Interpretation of critical incidents.

The following tables include a selection of critical incidents which occurred in each simulator session. In each case, the interpretations and comments of the Captain and Copilot are provided. Only the most significant incidents have been selected to illuminate the particular area of difficulty. All the incidents, across all the crews are of the same nature. The procedural problems indicate a problem at the individual level, where the Copilots are inexperienced and therefore unsure of the correct procedures. Interruption by the Captain, assertiveness and submissiveness on the part of the Copilots are also significant as individual level factors. However, in some cases, interruption by the Captain may be part of a group factor such as stereotyping and prejudice. Areas of misunderstanding and miscommunication are group level problem, where communication between members has been vague or ineffective.

Table 2. Interpretation of critical incidents. Crew A.

1. <u>Procedural problem</u>	<u>Comments</u>
Copilot. I see that Flaps five please. Capt. Okay we're going we need to accelerate a little bit more. Matthew. Okay would you like vertical speed? Copilot. Vertical speed please Capt. I'm going to give you about 1 500 feet a minute.	<u>Captain</u> What you're seeing there is the fact the he's inexperienced on the aeroplane. So basically what I was doing was playing captain and instructor. But that's only because of his inexperience, he doesn't really know what he's doing. He did remarkably well under the circumstances. <u>Copilot</u> He thinks we need to accelerate a bit more. If I didn't want vertical speed I would have said no. it's that lead that I'm talking about. He has answered me - he said Okay. That ok means that he is going to do that, but he's just saying that we need to accelerate a bit more. If he doesn't give me, you see after a while I call for flaps five again because he didn't give it to me, if he was going to give it to me he would have said flaps 5 selected. running five green light. By saying we must accelerate a bit more I realized we were not ready for flaps five and that would come later. The speed is a problem of hands on again. You know you have to accelerate, but you don't have that experience of doing it yourself. The speeds are there to be maintained so that's why he says just remember your speeds.
2. <u>Misunderstanding/mis-communication</u>	<u>Comments</u>
Copilot. But then aren't we CAT 3 rated on this aircraft? Capt. Ja. CAT 2 is 350 meters. Copilot. 350 meters and CAT 3? Capt. CAT 3 200 meters. Copilot. 200 meters. Capt. OK. So.. they say 210 meters. Copilot. 210 meters.	<u>Captain</u> He was incorrect because Johannesburg is not CAT 3, it's CAT 2, but he didn't know that so it was a valuable input from him. I flew with him a couple of months ago, and I forgot to put the taxi lights on, and he immediately said to me, inboard landing lights. So he wasn't afraid to open his mouth. <u>Copilot</u> Because inexperienced, wanted to check cat 3, but the captain did not answer his question, therefore asked again. Captain did not really seem to be listening.

Table 2. continued.

3. <u>Misunderstanding/mis-communication</u> Capt. OK are you happy to fly the aeroplane? Copilot. Do you want me to fly it manually? Capt. No. No. Are you happy to continue flying the aeroplane? Copilot. Yes. Capt. OK. Now you've got to select PMS Charles. Copilot. PMS - OK I've got it onto PMS.	<u>Comments</u> <u>Captain</u> His understanding of what I said was different to what I meant. It's an expression which one would use, it could be due to inexperience, not knowing the jargon. The thing is here you've got an abnormal situation. You've got two qualified people and one unqualified person. Basically what we were doing here was trying to give him a chance to fly the aeroplane. That's why there are so many mistakes. Unless you understand the aeroplane, and you are qualified on it, this kind of thing doesn't come naturally, you've got to be prompted all the time. The one thing I can mention here is something I noticed with this guy is that his interpretation of what we sometimes think as being the normal way of speaking is, could possibly be a little bit different. He sometimes is inclined to take things at face value, the way you say it, he'll actually take things. He's the type of person you need to be very clear in what you said. If you imply something without really telling him what it was I think you might have a bit of a problem. <u>Copilot</u> Does not understand what he is referring to there - could be referring to flying the plane manually or with the autopilot. Needed to make clear what he meant. Reminding again, supporting the copilot.
4. <u>Instructing/coaching behaviour</u> Copilot. Flaps one please. Capt. OK I think we're a little bit far out for that. If you don't mind if we just go down a little bit lower. Because we've got quite a lot, but long way to go otherwise we're just going to stooge around here with flap and really low speed. Just keep on your heading and when we get onto 15 miles we can start putting on flaps.	<u>Comments</u> <u>Captain</u> Instructing <u>Copilot</u> Guiding and supporting role again because the copilot is unsure of the procedure.

Table 3. Interpretation of critical incidents. Crew B.

1. <u>Procedural problem</u> Capt. At 3000 we turn left and return to Delta November NDB. If we have to go round I'll call go around thrust, go around altitude, flaps 20, positive climb, gear selected up. Copilot. OK right. Capt. OK. Copilot. Uh, that checks. Capt. Thanks. Copilot. OK I've captured the DME my side and select Durban, says we routing direct. Capt. Put Durban your side 1125.	<u>Comments</u> <u>Captain</u> He's getting pushed a lot, but it's normal pressure under which a normal copilot would be able to cope quite adequately is he was experienced on the aeroplane, but if you take a brand new guy you're going to get him really battling no matter who he was. You can put somebody under pressure just like that. <u>Copilot</u> I am inexperienced on the aircraft and so sometimes I am not sure of the procedures. They are different on all aircraft.
2. <u>Change of Roles</u> Capt. Would you like to fly the aeroplane? Copilot. Oh, well I can fly it if you want me to.	<u>Comments</u> <u>Captain</u> Changing of roles, clarification. at this stage it was actually quite difficult for him because we were hot and high. But he did fine.

Table 4. Interpretation of critical incidents. Crew C.

1. <u>Procedural problem</u>	<u>Comments</u>
Capt. OK Sipho you just fly this machine OK. Copilot. OK. Capt. It's not easy flying on this instrument. 31 000. It looks like we've had damage - watch speed, watch your speed there. Eng. Speed watch your speed there. Capt. Speed get your thrust up. Copilot. OK I'm getting the thrust up.	<u>Captain</u> OK what's happened here is the engines have flamed out and he hasn't realised it and we haven't realised it yet. And the next thing is the aeroplane stalls and falls out of the sky. But his task is very difficult because all his instruments are dead and all he can use are a few instruments on the left hand side. A very loaded situation there, so that's why I'm saying watch your speed, because I didn't understand why the speed was so low. It was a crucial thing that had to be sorted out before we could go any further. <u>Copilot</u> We have a problem. In these kinds of situations, the captain stabilizes the problem, and then he hands it over to the copilot. That's basically what he's doing, so he can now move his chair back and he can now have a look at the front and at the back panel. I was not used to flying and the speed was dropping off, so the captain was just reminding me and drawing my attention to the fact that we needed to get the speed up. And the way he does it is he makes me very aware that the situation is critical. That tone of voice shows that it is critical.
2. <u>Assertive behaviour</u>	<u>Comments</u>
Copilot. Can we go down to level 260? Capt. Let's go to the dual engine failure checklist first and then we go to the engine generator failure. OK 250 knots, maintain 250 knots and level 250. Copilot. 250 now thanks we'll go down to 250. Capt. Thanks let's go both engine flame out. Eng. OK they are stabilizing slowly, but surely. Copilot. Captain, we need to go 260, we're going even level directions. Shall I make it 260?	<u>Captain</u> OK, interesting, he's spotted, that I said lets go to 250, because that was the highest altitude we could fly - I remember the checklist said 25000 and he said that 25000 was an inappropriate level, so he said ok we need an even level, lets go to 260. Very interesting because I was unaware of it, so he's picked up something. He could have said well 250 is an inappropriate level, and left it to me, but he actually nominated a level. <u>Copilot</u> It was critical that we get down to a lower level. Now what's happening with the 260 is that 25000 feet is the level at which we should be, now, but it was in conflict with the direction in which we were going. So I was just alerting the captain to that. So once again, as I say, everyone has an input.

Table 4. Continued.

3. <u>Interruption by the Captain</u> Capt. Do you agree with that as a general principle? Copilot OK um. Capt. In other words you bypass the lost communication procedures on the star.	<u>Comments</u> <u>Captain</u> OK now that's a slight urgency there as well, because there's a speed limit on this aeroplane, the speed limit's are important. There was a danger of losing both engines because they were exceeding the upper fan limit. As far as authoritative or democratic, that's fully authoritative.
4. <u>Assertive Behaviour</u> Copilot. Can I just request, one request. Holding pattern Juliet Sierra Victor, do you have any plan with that? Capt. Uh, Juliet Sierra Victor that's a good one, let's use the same one. Copilot. OK the same one right hand patterns Juliet Sierra Victor. Thank you. Capt. OK.	<u>Comments</u> <u>Captain</u> Right, interesting point here, what is picked up here is that on the normal approach plate for Johannesburg, the normal holding pattern is set on a long directional beacon, Juliet Sierra, not Juliet Sierra Victor, Juliet Sierra Victor is the VOR, okay, and there is no hold on the VOR. The VOR is all we had, we had lost everything else. And he's now flying with the VOR and his question is what hold should we enter because there's actually no public hold over here and we have to, the rules of lost communication say yes we have to enter the hold first and then start our approach from there, so he spotted the problem, which is also quite interesting. I guess a more experienced copilot would have improvised for himself and not worried us in the middle of a checklist, but it's perhaps a question of experience and the extent to which he would have been prepared to make a unilateral decision like that. <u>Copilot</u> I was alerting the captain to the fact that there was no pattern there, are you aware of that?

Table 5. Interpretation of critical incidents. Crew D.

<u>1. Instructing/Coaching role</u> Copilot Alright Captain, the the departure Captain, is uh Rhino 2 Alpha departure. Capt. OK. let's start with the ah. engine failure - The engine failure procedure RTO in other words.	<u>Comments</u> <u>Captain</u> That is simply called protocol I suppose. there's a sequence by which the departure has to take place, and this guy at this stage left out about two or three items. So my role is to remind him of the correct procedure. <u>Copilot</u> Ok I'm in the stage of uncertainty , because I'm doing the takeoff now. Do you see the captain there. he tried to help me he saw I had problems so he tried to help me. This is what they do you know, they do not let the process or the problem escalate. Once they see that they are in a bit of a problem. he comes in and that's what he's supposed to do as well. We all help each other.
<u>2. Miscommunication/misunderstanding</u> Copilot. and speed ahh.... Capt. 297 Copilot. 297 yes thanks. Capt. OK 297. Flaps up and the lights are out. And John if you're happy you can unstrap them. Copilot. Ah, sorry. Capt. You can unstrap the pacs.	<u>Comments</u> <u>Captain</u> Well I suppose a slight little confusion when I said unstrap them. I think initially I think maybe it went over him. and then he said I beg your pardon. I said can I unstrap the passengers? Once again if the guy's experienced in the airline. when you say unstrap them, there would really be no confusion as to who you're talking about. <u>Copilot</u> No I wasn't quite sure what he was talking about to be quite honest. when he said unstrap them, now this is outside our phraseology that we use. now what he actually meant there was I must switch off the seat belt lights. that I can switch those off.

Table 5. Continued.

<u>3. Misunderstanding/miscommunication</u> Capt. OK let's, what's the frequency? 114? Copilot. OK the frequency is 1141 Captain. Capt. 1141. Insert Oh, 140 insert South. Copilot. OK South is 2906 Capt. 06 Copilot. And East is 261 Capt. Is that 29060 or 2906 Copilot. 29060 Captain. Capt. Right. Copilot. And East is 26181 Capt. 6181 Copilot. and 1 Capt. 1. OK. 2618 OK, let's try again. East? 26181.	<u>Comments</u> <u>Captain</u> That particular situation, no, but it would depend on how crucial or vital the information is and how much time you have to process that information, we had to get that information into the computer quite quickly to assess the situation as to how to, what would be best to do under the circumstances. I already had a preconceived idea of what I thought the situation was, but I thought I would just confirm my suspicion as such by using the computer and its quick calculation ability, but of course, through communication inaccuracies, a task which is supposed to be easy and fast to accomplish, took a bit longer. And, yes it could be stressful, especially under certain conditions, yes it could be stressful. I suppose irritation could result in stress hey? <u>Copilot</u> Ok what's happening there I'm giving the coordinates to the captain, and he's putting them in the PMS and initially I don't know whether he made a mistake or the PMS didn't accept them but he wanted to make sure. Somehow he realised that there might be a mistake so he wanted to make sure that the figures he put in there were 100%, so he just wanted to check.
<u>4. Overbearing manner</u> Capt. What do you want to do now John? Copilot. Sir I must put in. Capt. No, no it's already there. I say I've put it in. Copilot. OK sorry. Capt. OK, so if you want to, you can just stick in your descent. Copilot. OK, ah. Capt. Or do you want to do a manual descent? Copilot. I'd like to do a manual, ja I'd like to fly it manually. Capt. Manual Copilot. Manually Captain please sir.	<u>Comments</u> <u>Captain</u> OK, I wonder if he perhaps didn't hear what I said, or he misinterpreted, he obviously misinterpreted what I said. What I said was 'I have put in a mach of 855 cruise, and possibly all he heard was 'put in a 855 cruise'. Instead of him realising, or him hearing me making a statement, he heard me commanding. I think the first bit of the communication he didn't hear. <u>Copilot</u> I didn't realise that he had already put them in so he came back to me and said its alright. If he had a chance I would have preferred him to tell me that he had already put them in, but on the other hand probably why he did that was because he saw I was busy with something else.. when he put that thing in. There is really no problem with that.

Table 6. Interpretation of critical incidents. Crew E.

<u>1. Misunderstanding/miscommunication</u> Copilot. That is Durban. Capt. Let me just check that the co-ords are right. South 29584. Copilot. Uh. negative I've got here 290. Capt. Just stick these in ... South 29583. Copilot. 295. Capt. 583. Copilot. 583. Capt. East 305070. Copilot. 305070.	<u>Comments</u> <u>Captain</u> We're busy loading coordinates and the copilot and captain are checking the coordinates, and he seems to be having trouble putting them in. I don't know whether that's due to communication. The communication seems very clear to me. But he's having trouble putting them in the right order, he's getting a bit confused. Any figures we use will always be cross-checked very carefully. <u>Copilot</u> There we were busy sticking in the coordinates for Durban and Bloemfontein. He is very proficient in using the thing so you sometimes find that the captain does work faster, but we're not used to it. It takes us a while to get used to it. He usually does help you along, but sometimes they put you under pressure, because he's very qualified, it's awkward for them, the adaptation for them to fly with pilots who are not acquainted with this stuff. So you find they want information quicker and you can't work quicker. He says there is Durban, which wasn't Durban, that's why I said negative, that's not the coordinates, so he was just saying well stick it in.
<u>2. Instructing/Coaching behaviour</u> Copilot. OK the go around is going to be go around trust, disengage auto throttle, um, go around thrust, flaps, positive thrust. Capt. Go around attitude. Copilot. Go around attitude. Capt. That's it.	<u>Comments</u> <u>Captain</u> He's missing a step there in the procedure and immediately when I mention it, he's knows that he's missed it out. The scenario requires that time is of the essence, so I would, if I wasn't coaching him, or coaching an inexperienced person, this would be pushing him, but because of the scenario of the sick person it is important that we use as little time as possible but that now would be pushing him, it's not the way you would allow an inexperienced first officer to operate and certainly it is putting him under extreme pressure and I'm trying to relieve that pressure by saying do this, do this, do that. And he's complying with that and in that way we're not putting the operation in jeopardy, by letting him deal with it himself, in his own time. I'm preempting things as they come along. <u>Copilot</u> He's reviewing the go around procedures. He's adding more to what I'm saying.

Table 6. Continued.

3. <u>Instructing/coaching role</u>	<u>Comments</u>
Capt. Just put speed in there. Copilot. OK. Capt. That'll keep the speed where it is and then when we're ready, we just go. Copilot. Got indicated air speed. Capt. OK once we want to go down not yet. Copilot. Not yet, ja. Capt. And then of course we can only use vertical speed with auto throttle speed. Copilot. Can't use it no.	<u>Captain</u> He wants to make a selection which is incompatible so I'm explaining to him why its not. It's coaching, it's instruction in fact. <u>Copilot</u> There he's explaining to me the situation. I didn't know all the systems, what works with what. That you only do on the actual conversion to the aircraft. He's quite precise, he doesn't beat about the bush.

4.3 THE INTERVIEWS.

This section contains the data collected from the individual interviews. The findings are presented according to the three levels of analysis, which are set out throughout the thesis. Therefore, the themes are categorized according to the individual, the group and the organizational levels. Each level includes the most prominent themes under that heading, supported by verbatim transcripts of the subject's comments. The remarks of the Captains and Flight Engineers, and the First Officers are separated for the purposes of clarification and comparison.

4.3.1. Individual level themes.

4.3.1.1. Ability and experience.

The White pilots were aware of the levels of ability and experience of their Black colleagues.

The Captains and Flight Engineers:

It was actually a pleasure. It was an eye-opener for me. It was nice to see the quality we had taken and if we could keep that quality we're going the right way.

There's no way we can compromise. We've got to lay down standard. We've had white guys who haven't come up to that standard and they've left. So if they don't come up to that standard, we've got a problem. And I think all the guys in the airline, they won't mind who comes in as long as the standard is there.

I think if we can produce a good product through the training, and we put it out onto the line, and the line sees it, there will be more acceptance.

The point of departure is that you're working with a qualified person, you're expected to be able to do whatever is expected of you in his respective position. And everybody is trained to the same, or a basic minimum standard, so you really just expect the guy to be able to conform to that standard.

But I would say the vast majority of the guys are "colour blind". We think in terms of pilots and what their capabilities are, not what colour they are.

Furthermore, ability became crucial in the training scenario, where candidates had to perform to standard.

In the training section we have a problem because I can't afford to send a substandard product onto the line. But now if I don't send the guy out, what is the company going to do? Are they going to come back at me and say Why? Are they going to accept the explanation on why I don't want the guy to go? I'm not happy with it. It puts you in a difficult situation because it is my signature whether he goes or he doesn't. OK I can be overridden. If they override me then it's not my problem, but somewhere I'm going to have to say no.

4.3.1.2 Stereotypes, expectations, prejudices and suspicions.

As the first Black group of trainees, the Black and Asian candidates seemed to have attracted much attention. This was particularly due to of the uniqueness of their position, the novelty surrounding them and the existence of some suspicion and caution towards them.

The Captains and Flight Engineers:

Being a black person he is obviously under the spotlight. People are looking for signs of arrogance, of assertiveness and of course if they find those signs, they are going to react to them where as a white person I think there is a level of tolerance for white people that is higher because people are not suspicious. You know the line guy will be naturally suspicious because of the artificial nature of their introduction.

I guess stereotypes are a bit of a problem, you see a black man, you will automatically stereotype him as being a product of the transitional period, of affirmative action, although that is not altogether true. I mean you must remember some of them were selected on merit. Although one can't generalise, because the bottom end of the group can definitely be classed as affirmative action and are therefore the object of very fine and careful focus by the line crews.

Along with the careful observation of the Black pilots, there seemed to be some suspicion and caution towards them:

I suppose its only natural, in the South African context, to be slightly biased, or not biased, but preconditioned is perhaps a better word, in terms of one's suspicions.

There is definitely an uneasiness, an uneasiness, not because they're black or white, but because one doesn't know what they're thinking. I haven't noticed any great change in behaviour of anybody, people tend to behave the way that they normally do. It's more, who's thinking what. It's subtle, but its there. Different people, you know what's acceptable, what's the norm, what's unusual behaviour to other people.

The idea that the current suspicions would fade away with time and increased contact seemed to be a common thread running through all the comments:

That will be something that with experience and exposure to it will fall away.

The viewpoints concerning expectations appear to contradict the subjects' opinions concerning stereotypes:

My expectations are precisely the same as for anybody else who comes into the airline. I suppose you size them up from the moment you meet them. I normally take an even view of people, so I'll wait a bit and see what he's like. The way they conduct themselves in the cockpit, the way they fly the aeroplane, the way they handle the rest of the crew, the way they handle other people and that doesn't matter what colour they are.

If I had to say there was something over and above that I'd expect, or something any worse, in my expectations, in so far as do I expect less of a non-white pilots as opposed to a white pilot, of the same training and same standing, the answer's no.

The point of views of the Copilots seemed to vary a little from those of the White pilots:

The Copilots:

I think if people do not know much about the black culture or black people, then you should

say "Let me just find out if there will be problems" that's how I feel. And then, okay, let's see what they're like and you know you'll either find that you have a lot in common, or you don't. But I've been very fortunate, people come back to me and say 'You know, I had my reservations about you, but not anymore' and that's very encouraging, especially now. I think we've got to make the difference for the next people. But the people here are very helpful. I think if you came here expecting preferential treatment because we're black, that's not going to happen. We're expected to perform and show that we can perform. So I think it's going to depend a lot on the attitude people are going to take. But we are fortunate that the crew respect other individuals and realise that we all form part of the chain that creates the airline, the organization.

4.3.1.3 Attitudes.

The attitudes of both White and Black pilots seemed to have a profound effect on communication between White and Black pilots.

The Captains and Flight Engineers:

I think there is a certain amount of adaptation, but I think it's, it probably results from the political dispensation in the country, probably people's attitudes towards these people. What I've seen from my experience, from what I've seen so far its been a lot easier that I thought it would be and possibly because of the quality of the people we're dealing with. We're sitting here with the cream on the top, what it might be like when one gets down to the milk underneath, I don't know.

The situation we could have here is an attitude more than a language problem. And huge expectations and resentment coming from both sides.

The performance of the Black pilots in this regard, seemed to have a significant impact on the attitudes of the White pilots to the Black pilots.

I guess when they first came into the airline and before I had any contact in the simulators in a way I suppose I had a question mark. But I've seen them perform in the simulator.

Furthermore, with regard to the attitudes of White employees of SAA, there were incidences of tension between pilots and cabin crew. One of the subjects related this incident:

On this last flight one of the black copilots was one of the crew members and one of the stewards was supposed to serve us and all of a sudden there was friction between the black copilot and the steward and really at the end of the day I think the problem was with the steward. He didn't actually like it, serving this guy. And then the black guy actually called the steward and said look you can't talk to me like that and then things sort of started snowballing and eventually I went into the cockpit and said to the captain there's a bit of a

problem coming your way, and I believe its the steward's fault. I think you need to be fair and professional in this whole thing, you know, so I warned him. And one thing led to another and the black guy went into the bunk and I went about an hour later and then the steward came and he actually pulled open the curtain and he said to this guy "You know you're supposed to sleep not do whatever you're doing", which is wrong. And then he came out of his bunk and he woke me up and he said now I'm really furious and you know now the whole crew is, it really was the steward's fault. Now what I'm really saying is that at the end of the day you're affecting the whole crew concept and maybe that will take a bit of time, that type of thing. If you bring in the political angle, there's a lot of cultural differences in our country and we all have to accomodate and change, that's the way to go and I believe it.

From the Black perspective, attitudes had a distinct effect on the climate in which communication took place. Especially where a person higher up in the hierarchy seemed to have a negative attitude, this significantly impacted on the perceptions and expectations of the Black pilots.

The Copilots:

I can quote a situation where one of my colleagues went on a trip and he said you know the captain never really said much. And he didn't create a conversational atmosphere. So he was never really sure what his position was. And then a bit later the guy cracks a racial joke. Now this guy felt in an awkward position, because, you know does he take offence or does he crack a joke back?

4.3.1.4. Language.

There appeared to be mixed ideas concerning the impact of English as a second language amongst the Black pilots.

The Captains and Flight Engineers:

No I don't think it will, because, aviation worldwide is conducted in English and these people learn to fly in English, they're instructed in English, they study in English, they write exams in English and all their dealings in aviation are in English.

However:

We're going to have to have some training because of the nature of the work. English is the aviation language, the books are all in English, and overseas they speak English so the guy must have a command of the language is going to have to be good. For example: I say OK carry on with the checklist and he came out here with "cargo doors" and they guy says "cagados", so I said, what did you say? What are you trying to tell me? Eventually I had to look at the checklist and ask "What are you reading here?" And "cargo" came out as "caga".

Just the intonation. Now in an emergency that might be a problem because I don't understand what this guy's trying to tell me. So I think that is the aspect we're going to have to have a look at. It's bad enough when we fly to Europe and they all speak English with a different accent.

From the Black pilot's point of view there was less of an emphasis on pronunciation and intonation:

The Copilots:

Not really because in the Ciskei when I started flying we always spoke English and there were no procedures that were laid down in our language so right from the beginning we spoke English and also we had come from a flying school where they used English. So I'm quite OK although I must say of course English is not my Mother language, it is not easy sometimes because you not only speak the technical kind of English in the cockpit, sometimes you have to speak general English so that sometimes is a bit of a problem.

4.3.2. Group level themes.

4.3.2.1. Role structure, rank structure, status and power.

Appropriate behaviours in the cockpit were determined by very specific role and rank structures.

The Captains:

The cockpit is fairly tightly defined in terms of your function eg. the copilot, one of his functions is to liaison with the company represented by Operational Control Centre, liase about things like passenger handling provisions on board, technical aspects.

I suppose among other things my role is to elicit and recruit the cooperation of my crew, to lead by example. Also to create a congenial atmosphere so that everyone feels needed, useful and participative. I think my role influences the other crew members simply in either a positive or negative way. Hopefully the way I do my job will rub off, if it's good, and of course the way I treat them in doing my job will either make them feel part of a team or left out.

The notion that although each member had a different and specific role to fulfil, all three roles interacted in a team work type of scenario was particularly emphasized:

The point is we require all three of us to make up the crew, the copilot and flight engineer are part of the links in the chain. It has to be a team. In fact we're encouraged very strongly

against being a one-man band.

In the culturally diverse cockpit, another role appeared with regard to the Captain:

My role is almost that of a mentor, because the copilot is new. It does put more of a workload onto the captain. As far as the cultural aspect is concerned it's a matter of understanding and realising that you are dealing with somebody of a different culture and like I said, there are assumptions that we make that can't be taken for granted.

The Copilots:

You have your duties to perform, you have certain legs to fly, where you are now responsible for fuel decisions, and you fly the legs. So now the responsibility is on you to decide the amount of fuel that you want, things like that. He does the radio work, that's his duty while you're flying and while he's doing the flying you do the radio work.

It all coincides because while he's doing the radio work you're not just flying, you're listening out as well because he could have made a mistake so you always very attentive, same as if he's flying and you're doing the radio work, he's also listening out.

The specific roles of each crew member seemed to be clearly demarcated and understood by each individual.

As far as handling the aircraft goes, my role is to cooperate with the captain in an efficient and professional manner. Basically I am the second person in command of the aircraft. I must be very aware of what is going on at all times. At the end of the day, it all comes down to teamwork. If the captain is having problems at home and is not really with it, or if he's making mistakes, then I must be aware enough, and assertive enough to take over and perhaps even make some decisions.

The Black pilots perceived the Captain's role as follows:

First of all he is a person who, he must be a good communicator, that is, the first thing he must be able to communicate with the other crew in the cockpit. And he must be the kind of person who also gives a chance to the other crew members to make their own decisions and ultimately he must be the kind of person who can put all the decisions together and form one decision, but based on expertise from various people.

4.3.2.2. Norms, standards of behaviour, cohesion and conformity.

The adherence to norms was particularly emphasized in the findings.

The Captains:

One's own behaviour becomes very stereotyped and operates within very narrow limits. You each have your own characteristics, but you will recognise a movement outside the limits very quickly.

With regard to this, it seemed to be very important to behave appropriately and dress according to rank:

The first time I got hold of them I said "You guys are boy pilots, not because you're black, when I joined I was a boy pilot". It's just an airline word and they accepted it. I said "when you come you will wear tie as well and dress as if we are going to fly the aeroplane". And they came dressed better than I was.

Also within the cockpit, adherence to roles and rank seemed very important, although team work was a prerequisite:

A lot of the duties of the copilot can be initiated by himself, of his own incentive, as long as they are routine, but as soon as they go beyond routine, where perhaps a decision has to be made, a decision involving the onward progress of the flight or something more important, or that would require input from the captain normally, and he makes the decision without reference to the captain, assuming that there is no pressure on time, and he had the opportunity to discuss it, but instead took it on himself to make the decision for the captain, and go ahead with and make the request. That would be considered out of line.

The Copilots:

It is important that there is a rank structure as it were, there is a pecking order, that needs to be there. Our operation requires that to be there, but that being said, it has to be a team effort and a chain is only as strong as it's weakest link.

Discipline is the most important thing in the sense that, like I said initially, you've got duties as a copilot and the captain's got his duties. Now you've got to stick to your duties, you have to be very highly disciplined, to stick to your duties. But at the same time, we have to work as a team, if one member of the team is not performing as he should, then the whole process is broken down and he is actually a flight hazard. One should always perform up to expectations, not below.

You've got to anticipate things and get things ready (the copilot). You don't say "Oh I can see we're going to need this", and then do nothing about it. I'm there to help him, to do the radio work if he's flying, find things that he needs in the manuals etcetera. You also need to establish that everybody is in the same frame of mind. Everybody needs to be happy with what you are doing according to the standard procedures, and what you are asked to do.

In the cockpit itself, its not a one-man show. You know especially in the 747 cockpit we have three crews at the same time so you really have to concur about what you are going to do and

what your actions will be and you know if anybody disagrees he's go to voice it out and say listen I think this is not right or this is kind of wierd or this is not according to SOP (standard operating procedures), SOP says this, then we can discuss it. So its quite, everybody's involved in decision-making, and so we talk to one another.

One candidate gave a detailed description of the kind of interaction that took place in the cockpit:

Well you know you're flying as captain and copilot and each has his duties, the copilot has his duties as well so basically in short flight the cockpit is basically sterile. The work load is high during take-offs and landings and you find that you're so busy all the time there's no time to chat or do other things, you've got to do your work and as you get airborne, during the climb you find sometimes you're ahead of the aircraft, you have a bit of spare time and you can do other sorts of duties that you normally do on the ground otherwise, you maybe have a small conversation with the captain. You always fly with a different crew so you now have to intermix and get to know one another, so next time you're flying you know you've met the captain and he knows your background, he knows where you come from you see. You've just got to adapt, different captain's operate differently. But basically I've found flying with different captains, everyone has their own view, everything is done in a standardized way so what everyone is telling you is more or less in one direction, so you don't get lost.

The ideas represented above were strongly related to the notion of assertiveness in the cockpit. This seemed to be very important, although there was a subtle difference between what was viewed as assertive and what was seen as over-assertive or arrogant. Assertiveness in the cockpit was necessary and encouraged to some extent:

The Captains:

The fact that we have to work together there's no one-upmanship and you mustn't be scared to ask if you don't know what's going on. And you must be prepared to listen to what other guys say no matter how junior they are. It could be the boy pilot, he could be black, he may see something that I miss. If he brings it to my attention I must appreciate this and encourage this guy to talk.

The Copilots:

Unfortunately its happened quite a lot of times that you have an overbearing captain and the copilot watches him going from one error to another, eventually they kill themselves, purely because he's not been able to say - that's it. You have to learn to see where you must be assertive. Because the cockpit is not a place for conflict. You don't want to create conflict, but if the captain is like that, then you have to be assertive when it comes to a point where you realize this could be unsafe. If I don't consider the aeroplane to be in imminent danger

from what he is doing. I could let it go and monitor it, because he's not really putting it in danger. My approach would then be to speak to him about it in the right place, not in the cockpit but on the ground and say look captain, I would rather appreciate it if you would brief me about what you are going to do.

On the other hand, established, higher ranking members were quick to point out when the level of assertiveness was perceived as arrogance. One of the Captains made this particularly clear:

The Captains:

In terms of the route training I had to highlight certain areas which were peculiar to the situation of being black, which I wouldn't have had to handle with a white person in such absolute detail. That was with the route training which is after the simulator training, and it was right at the end of the route training. I suppose, I just had to warn him against appearing to be over assertive is not the word, precocious is the wrong word as well, but I had to warn him against being too clever, too forward, too, natural if you like, too creative in his input and had to describe to him a little bit the ethos that we operate with in this airline is largely military although, adapted to a civilian nature over the years and he could be hurt by various people with a stronger military background.

Until he had been hardened you know it takes a year or two to become hardened and to discover exactly where you are in the whole structure and what your limits are and what you can get away with and what you can't and situations where you really have to make a decision, whether you risk being precocious or assertive or not it's certainly you have to, it's required of you, it's part of your job to be assertive. But the other areas, probably 95% of the time where it's better not to be that way. Because of the rank structure and the military history. It's only because he's intelligent, he is experienced, he is obviously grown up in an environment where he was not afraid to question authority. But obviously you have to adapt that behaviour to this environment otherwise you could get hurt.

What I was trying to tell him was that I didn't expect a very junior co-pilot to hold forth on how he feels the company should be run on major issues at an early stage. I expect that later, later down the line. There are norms which one gradually absorbs in the airline, and one of the norms is, yes that you are not going to expect a very junior man to make judgements on major policy issues like that. There is also a code of behaviour in the cockpit and a) its determined by rank structure, you are allowed to open up as your seniority increases, years of service with the airline as well I suppose as a base line of experience level when you start, so it is very subtle thing, but you are expected to behave in a certain way.

4.3.2.3. Crew composition.

Due to the fact that the crew composition was constantly changing, crew members might not have found themselves flying with the same crew very frequently.

The Copilots:

No, not at all, because you can work with the other crew and they have different experiences that they have had on a flight, or something happened to them a long time ago, then they can relate to you and then you can apply that to yourself and say listen, this can also happen to me. So I must really be wary of things like that and that and that. And you know flying is never the same. You can take off today this minute and come back to land one minute later and the conditions will be different. So it's a learning game, you never stop doing it, so you are learning everyday. So I think it's part of the everyday learning, flying with different crews and you get the experience and you get to see what they operate like and you get to see how you should operate and so I think with the different crews it works quite well.

Some candidates did suggest, however, that changing crew composition impinged on the time available to get to know each other and perhaps break down attitudinal barriers. This was especially so on short, internal flights.

4.3.2.4. Standard operating procedures.

The Standard Operating Procedures ensured that there was a set structure for operation in the cockpit. These procedures ensured that each member performed a certain duty, and that crucial tasks were not omitted.

The Captains:

They always work. I'm one that goes along with it, I always have. It makes life a helluva lot easier, easier for me, for the people you're dealing with, copilot, flight engineers. Doesn't matter whether they're white or black, it just makes life a lot easier. Another thing, that if you are dealing with a cultural difference, or somebody who doesn't understand the English, SOP makes life a helluva lot easier.

The Copilots:

It makes a big difference, because you know when you get into the cockpit, you know this is my duty. Without that you're just lost, you don't know what to do. So the laid out standard procedures are such that the copilot performs these duties, the captain, and it's like that from when you jump into the aircraft, to the end, all standardized, so exactly, once the aircraft is standardized, we find that the operations run much more smoothly.

The copilot knows what he has to do. In other words, there is a clear cut definition for each crew member. They know what they need to do. In that sense there is no confusion, and you don't have to be afraid that you don't know what this one likes, what this one dislikes, you just

do your standard work and that's it.

4.3.3. Organizational level themes.

4.3.3.1. Affirmative Action.

In particular, the Affirmative Action context affected the attitudes of the White pilots.

The Captains and Flight Engineers:

I guess stereotypes are a bit of a problem, you see a black man, you will automatically stereotype him as being a product of the transitional period of affirmative action, although this is not altogether true. I mean you must remember some of them were selected on merit.

That's the kind of problem situation I see arising where you have a particular individual who feels he's disadvantaged and that, you know, we've had it already, where talk about the fact that they should have been introduced into the airline when I joined the airline, they've been disadvantaged therefore they must get instant promotion. And if they don't that's the sort of resentment that's going to build up, the sort of resentment where they think its white authority being exerted once again.

Our biggest problem is going to be accelerated promotion. You know they're saying they were disadvantaged. It has been mentioned that maybe management might look at one stage and say we have a black guy who is 40 years old, where is the contemporary white at this stage, he might be a captain and this guy should be there but he was disadvantaged. Now that is going to cause tremendous trouble with the people he bypasses. OK the airline is a numbers game, your number determines where you are.

The idea that these people are part of an Affirmative Action policy and by virtue of the fact that they were the first Black pilots in the organization, put them in the spotlight.

I think you might appreciate the fact that he was unique and that if he blew it he would probably blow it for the rest of them.

4.3.3.2. Social interaction.

A fair amount of social interaction took place amongst the pilots, especially on lengthy trips, where they had some time to spend together.

The Captains and Flight Engineers.

It was normal, there was no feeling of wanting to go your own separate ways, or wanting to bend over backwards to accomodate.

Most of the pilots at SAA consumed alcohol between their trips and these "drinking sessions" were an integral part of their getting to know one another, and provided an opportunity for the forming of friendships. Participation in these drinking sessions therefore seemed very important:

This guy doesn't drink, which would be a problem in the airline. He came out with us, he drank coke with us, while we made fools of ourselves, in fact, had a good time. Lots of beer. But he fitted in, I think because the rest of the guys were willing to accept him. Nobody shunned him. A very Afrikaans crew - I was surprised. It was also I think maybe these guys have also realised there's no way they can fight it.

Some of the other Black pilots who usually did not drink much, found that they had begun to adapt:

I was on one of the overseas trips in Munich with one of the black guys. The black pilot said that he only drank one beer. He was then encouraged by the crew to have another and after some persuasion, he did, saying that this was his last. The crew managed somehow to slip another beer in and noticing this, the black pilot said he couldn't possibly have it, but with a bit more persuasion, he drank it.

The Copilots:

We've got a very good thing here. There's a very good culture, put it that way, that, if I've got a flight overseas, on the first day of arrival, everyone gets together and we go and have supper together. We all share whatever we want to share and I think in that way you get to know all the crew members. So we get to know them on a different level to flying and I actually recommend it.

When overseas or on a night stop we go together as crew. We get a chance to get to know each other and this is a positive thing because if you know, if you see a person at work, you really don't know that person, but if you see him out of his work environment, you get to understand that person and you get to know that person better and then you can know this person is like this. So I think it is quite a positive thing.

In this sense, long trips seemed to be especially beneficial:

If you're on a short trip you find that you're under a lot of pressure, it's a working environment, you don't have a lot of time to talk. On a long trip, there are times when you have some time during the flight to relax and get to know one another. So sometimes you find that you spend a day with these people, but at the end of it you don't know them any better. Now if you go on a night stop, you go away, and you actually have a bit of time

outside the work environment and you have a drink together, go out for a meal, whatever.

4.3.3.3. Adaptation.

Adaptation seemed to take place on three levels: the training, the technical aspects of the work, and the interpersonal relationships.

a) Training.

The Captains:

We're learning as well, the cultural aspect being a major part of the training. I mean we have to adapt our ways. I think what the airline has done, is we're going to put a lot more effort into ensuring that there are no hiccups in the path of this group, particularly that group, being the first. You can understand the problems if they don't come up to expectations, that's going to be a problem, so we had to, we've got to adapt to some slightly different circumstances.

Well we have to look at the profile of the individuals who have joined this airline. In the past we have been similar to each other, to the culture that we know, so they come through, most of them what seems to be logical to one group of people, it may not be logical to others and that is what we've discovered with this initial training that we've done is that we can take nothing for granted, we can't say a technical aspect and assume any knowledge, you've got to ensure that the basic knowledge is actually there. It's an understanding of whatever the concept happens to be. No assumptions can be made. In the past, because of the fairly stereotyped background people come from, you could make assumptions. We now can't do that, we've got to make sure the knowledge of whatever subject is there.

However, although training had to accommodate new members, there could not be a decrease in the standard of the pilots. This seemed to be one of the most crucial factors for SAA.

These people were selected very very carefully, they're very intelligent people, not that we'd ever take, we'll certainly take people with a lower education. We cannot allow it to affect the standard, there will have to be more training, effort will have to be put in, and also the quality of the training. There is a shift in emphasis, that will have to take place. We intend to still select the best people, but they will be very young, they might not even have driven a car or anything like that. We will take people like that and train them. But they will be trained from square one. Which means that we will come into contact, and how our methods and our way of thinking is instilled in them right from the start. And they may be better off than these people who have had some flying experience and are now put into this. Their education will always be different and I think cultural aspects will definitely come into play. Adaptation that not only the students will have to make, but that we have to make. To adapt our training to ensure that it actually achieves the same goal.

With regard to the training, the candidates suggested that the type of training instructor significantly impacted on the learning process, as well as future expectations.

What I find is that some training captains are really good people and they make a difference to what we expect of other people. You can have an instructor and you can have an instructor. You can have a guy who can put across certain points and then you have other people who don't know how to do that. And those are the people who can make or break. To me if an instructor can see himself as having a responsibility towards his students, then you have a person who is committed because he cares. Instructors can either make or break your confidence. I've been lucky, I've had the good ones.

The emphasis on better and more intensive training was seen to be particularly important with regard to less experienced pilots. This process of adaptation seemed to become a cause for concern, particularly with regard to less experienced and qualified candidates:

For others I do think we're going to need some bridging training, for example in aerodynamics, for those who might come to SAA without that kind of education, where they learnt about those kind of things. One needs to know those things before you can do the training proper. Black people have not, very few have been exposed to good science and maths in school, so they are going to need help. And this is a profession which requires a lot of that. So I'd like to see them have a course with a lecturer from a technikon or whatever. You can do stuff like aerodynamic, gyro electronics etc. They all love flying but they don't really know everything what is involved.

Well there's one thing, we were a big class in the first place so you could not get that, some other guys were ahead of us, because they were flight engineers and we were the new intake, so we couldn't really catch up with them so those were the problems, but at any rate we had to work very hard just to speed up, to catch up with them.

b) Technical.

Adaptation also took place in relation to the technical aspects of flying.

The Captains and Flight Engineers:

It's not only a new company, it's a totally new environment the cockpit, the crew concept that we use, and many of these people have got very limited experience in that sort of flying. It's a totally new concept of flying aeroplanes. So that's where there's most of the difference.

The Copilots:

It is quite different because the aircrafts I used to fly were not jet aircraft, the thing is with boeing they have their own way of doing things and with the new aircraft and the different

limitations and things like that, so we really had to be introduced to the whole system.

The technical was a bit different, because as far as what I was flying, I never flew jet, I never flew pressurized aircraft so and then we've flown the 747, you know it's a very big aircraft, it's very technical, it was different, it wasn't difficult, it was just different. Well I hadn't had any experience, so it was a good learning curve for myself. It wasn't difficult, lots of work, but we got on quite well.

I don't think I've had much of a problem in terms of changing because first of all I was flying in the Ciskei. I flew as a copilot so I had a bit of experience with that. I also flew as a captain as well so I had my copilots working under me. So in terms of really changing, I didn't really have much of a problem. The only problem that I did have was the procedures that they have in the airline (referring to the whole organization). They are very strict kind of procedures. For example let me start in the cockpit. When flying the jet engine, it's different from flying the turbo prop engine. Now there are certain procedures that one has to follow and if you don't follow these procedures, then you're out of here. Now I'm talking about those procedures that you have to follow orders to be in line or in sequence with the aircraft and the whole organization as such. It wasn't easy I must admit.

c) Interpersonal.

Although the Black pilots had to adapt to the technical and training aspects, adaptation with regard to interpersonal relationships was a two-way process between White and Black members.

The Captains and Flight Engineers:

I think the guys have realized the changes that have come about and I think in a way the guys will bend over more to accommodate, to help and to show them the ropes. In a way I think it's different. I mean when you go for a meal it's not the same as with the boys or the females, it's different. You talk about different things. I think you're a bit wary, wary in the sense of you know if things go wrong, let's say the black guy speaks too much, then the implications of that would be much more severe, certainly I would feel that the odds would be more against me, so on that basis you're more aware of the things that might go wrong. Generally I mean to accommodate in the working environment I don't think that's a problem, as such I mean if the guy can do the job at a high level.

It is quite interesting that in fact that there is as much of an adjustment for us as there is for him. I suppose you've got to work at it.

This candidate especially emphasized the point of accommodation taking place on the part of the White pilots. In addition to this there seemed to be an understanding that adaptation takes time, but could be speeded up by increased interpersonal contact:

Well I really believe that if I had to fly with certain black guys for the next ten years then obviously one would learn to grow together and understand each other better and maybe in understanding a lot of the suspicions, and I don't mean suspicion in a negative sense, or the differences would be diluted and you will understand more why certain people do things a certain way. I guess what I'm trying to say is that it might take a long time, maybe it will actually be easier for them to adapt because they are thrown into this river of white water and that's all they see is white faces. And really I'm not a racist, in fact I'm a great democrat, but I just feel there are big differences. They're definitely not stupid, they're very capable, but they are different. Some of the differences you understand, but some, I'd say 70 percent of the differences you don't understand because you don't understand the culture, the thinking process.

We have to be careful now because it's a common thing, you know "you're flying like an Af", and you can't say this. Now with this. So one has to be careful. I mean racial jokes are sensitive and when you're sitting with these guys you just have to be careful what you say. Although I'm sure these guys will take it in the way you mean it, they're not going to take it offensively.

The Copilots:

Initially it was very stressful, because first of all it's a very big organization and I've come from a very small organization, we were basically like a family. We all know each other, our likings and dislikes and everything, but now here you come and today you're flying with this captain and this flight copilot, flight engineer and tomorrow it's a different crew and all. So that puts a lot of pressure on you, because you don't know what each guy actually likes, and you have to adjust to each.

It's not really any different from what I've experienced before, OK it is a big organization, but as I said before, with the people being friendly and helpful we don't feel as if you're a black sheep in the whole herd, you feel as part of the group, you know you feel that if somebody comes and asks something you will be willing to help because they also help you.

It is the first time that I'm being exposed to a big Afrikaans culture. But at the same time, I think it depends on your attitude. I used to associate the Afrikaans language with that of the oppressors. But I think an acceptance of people as individuals and also a matter of trade-off. For example, an Afrikaans captain might tell me to learn Afrikaans, and I will say to him, OK, if you learn an African language.

It might be a problem for those who come from a predominantly Black organization. But all these people love what they are doing. I've found that there is only conflict in aviation if someone does not respect the profession; if he has the wrong attitude, or the way he approaches his work. It gives aviation a bad name. But generally I mean I told someone I would like to know more about a certain aeroplane, and the next thing is someone put the notes in my box, you know it's that kind of thing that, that common interest that brings us together.

Limitations to the adaptation process. External pressures made the adaptation and acculturation process more difficult than perhaps necessary. One Copilot spoke specifically about this aspect:

In the beginning we had problems getting ourselves settled in. And that created external pressures and unfortunately that did create some tensions. The inefficiency of the recruitment process put pressure on us during our conversion, in that the recruitment process was not done very well, people not getting adequate facilities, you arrive here and there are problems which we encountered, like our families had not been considered, so, like we had to stay in a hotel, but like are we going to have to pay for our families, kind of thing. And then there wasn't a period given to us to settle in, we came straight from there into the course. We had a full day, so we never had the time to go to the post office, go to pay bills etcetera. And then the other thing is the guys are not getting their full salaries because they're still in training, so there was a lot of pressure that we didn't need. So unfortunately the lack of consideration filtered into our training.

4.3.3.4. Acculturation.

The acculturation process was an important factor for Black pilots who had to learn the norms, roles and structures which were part of the airline's culture.

The Captains and Flight Engineers:

I think its really more getting used to the way we do things in the airline, where they fit in, possible perceptions about what things might or might not be like, how they would be accepted, that kind of thing. I think that would be foremost in their minds. From our point of view, I think to us, would be - are they capable in the job?

The Copilots:

SAA is one of the top airlines in the world and the way we operate is very much in line with other airlines in the world. So if we try to change that direction I think that would be very much detrimental to the airline and also to us. Maybe sometime in the future I would like to join one of the other airlines. If I approach it in the same way that SAA is doing, then I don't have a problem. So I'm quite happy to change to fit in with SAA.

For the pilot who had worked with SAA before, things seemed a little different:

It wasn't much of an adaptation for myself because I've been here before, known the people. I've flown with the captains.

CHAPTER 5

DISCUSSION OF RESULTS.

Several issues must be clarified at the onset of the discussion.

In the simulator sessions observed, the Captain was always a White, experienced pilot, whereas the First Officer was always a Black, inexperienced pilot. The communication predominantly occurred between Captain and First Officer. The First Officer and Flight Engineer rarely communicated, unless it was in the process of completing a checklist, or making decisions. The focus of these themes, therefore was on the Captain/First Officer dyad. The words Copilot and First Officer are used interchangeably. The term "training Captain" refers to a Captain who is qualified as an instructor and is involved with the training of incoming pilots.

5.1. DISCUSSION OF THEMES.

The discussion of the themes extracted from the interviews and observation will be explored according to the individual, group and organizational levels outlined in the contextual framework.

5.1.1. Individual level themes.

5.1.1.1. Qualifications and experience.

South African Airways found themselves in a relatively fortunate position with regard to the introduction of culturally diverse pilots into their organization. The organization was fortuitous from the point of view that, at this initial stage in the implementation of an Affirmative Action policy, they were able to select fairly qualified individuals. All five of the Black pilots had secure educational backgrounds and had the necessary qualifications required of any individual who

must proceed through the selection process. This meant that all the subjects had a Private Pilot's licence, as well as a Commercial Pilot's licence, together with some experience either in other commercial airlines, or larger organizations. Therefore, the subjects who took part in this research had a higher education, and had been exposed to more opportunities in the areas of flight training than the average Black South African.

This suggested that bridging training, and possible cultural differences in the areas of education and experience were to some extent lessened. The result was that the instructors at SAA were able to concentrate on the conversion of pilots onto Boeing aircraft, while the problem of integration and acculturation of new members into the organization played a very secondary role.

The expectations amongst the established line pilots, therefore were that culturally diverse, new members would have the necessary qualifications. This had a significant impact on the stereotypes and attitudes held by the members of the organization. Once again, these circumstances will change as SAA becomes obliged to select less qualified and experienced candidates.

Furthermore, the fact that all the subjects had some experience as commercial pilots, (especially one subject who trained with SAA previously), illuminated the notion that acculturation and adaptation for these new members was significantly easier than was expected for very inexperienced newcomers.

Finally, with regard to training, all the Black subjects began their training at the "relief pilot" level, and proceeded through the same process of training and promotion that any White candidate would be expected to follow. This was possible because of the qualifications already acquired by the Black subjects. Furthermore, this was a significant situational variable which had

to be taken into account when interpreting the results. Future Black employees of the organization will not be expected to have the same high level of experience. In such cases additional bridging training ranging from matric level science and maths, through to aerodynamics and tuition with a view to obtaining Commercial Pilot's licences, will be expected.

5.1.1.2. Ability and experience.

Both the level of education and the abilities of the new members affected the stereotypes and attitudes already held by established members of the organization. This corresponded with Schultz's (1989) idea that an individual's credibility in the group will determine that person's reputation in the group. The credibility of the subjects in this case increased their acceptance by the group. It seemed particularly vital that newcomers had the necessary abilities for flying, and this, more than anything else, impacted on the attitudes and impressions formed by the White pilots. Along these lines of ability, there were no margins for compromise.

Regarding this particular group of subjects, however, it was indicated in the data that although the subjects had the necessary qualifications and abilities, they were still inexperienced in terms of flying a Boeing aircraft. This inexperience was evident in the high number of procedural problems encountered when the Copilot was flying the aircraft. (See Critical Incidents Table, Crew A and D). Most of the communication difficulties were a result of the inexperience of the First Officer in terms of the procedures for the aircraft.

The fact that the First Officers were very inexperienced was anxiety-provoking for all the crew members, and emphasized the need for accurate and effective communication between them. Furthermore, the inexperience of the First Officers made it necessary for the Captain to perform an additional role - that of instructor, as well as leader of the flight crew.

The expectations of the White crew members were contradicted by the fact that the Black candidates were of above-average intelligence. This also appeared to enhance the general credibility of the Black members. This confirmed the idea that expectations emerged from the intergroup attitudes and stereotypes which we hold, and that these expectations might either be fulfilled, or violated in the contact situation.

It is interesting that although White established members of the organization were quick to stress that their expectations of Black pilots were no different to those imposed on White candidates, they did emphasize an increased acceptance as a result of the factors outlined above. Therefore, there seemed to be some dissonance between what was verbalized and what was actually believed. This may have been due to the interview situation, but is more likely a result of the expectations placed on White members to abide by and facilitate the transitional period in the organization. This might have been in opposition to their deep-seated desires.

5.1.1.3. Stereotypes.

The subjects of the study indicated that there was some suspicion between White established members of the organization and the incoming Black pilots. This could be attributed to the situational factors surrounding the current step towards cultural diversity, particularly the racial struggles that surrounded intercultural communication at that point. In addition to this there seemed to be a covert sense of uneasiness between crew members. The subjects admitted that this anxiety stemmed from a fear of the unknown thoughts and perceptions of other crew members. This correlated with the Johari window representation which suggested that personal communication under these circumstances was very limited. Instead, communication tended to be rigid and superficial. Crew coordination and communication under these circumstances could have been limited.

This had significant implications for communication on the flight deck. Firstly, while stereotypes and suspicions prevailed, crew members communicated rather superficially with one another. Communication was centred around task related issues. This was evident in Table 1, which showed no incidences of personal communication except in one crew. In this particular crew, the copilot was more experienced and more confident than the other Black pilots. At the same time, crew members were acutely aware of the overt differences amongst themselves, those being physical and linguistic differences. For example:

I suppose it's only natural, in the South African context, to be slightly biased, or not biased, but preconditioned is perhaps a better word, in terms of one's suspicions. It's more who's thinking what. It's subtle, but it's there. Different people, you know what's acceptable, what's the norm, what's unusual behaviour to other people.

The result was that behaviour was very tentative. Both parties were still "testing the waters".

In the light of these observations all the subjects indicated that they were aware of the stereotypes they held and that these stereotypes were likely to influence their communication and interaction with culturally diverse individuals. However, there was a strong indication that these stereotypes were reevaluated and modified as a result of increased contact. Because of the modified stereotypes, crew members' perceptions of Black members became more complex. As the theory suggested, they were now able to consider individual variability and avoid viewing the outgroup as a homogeneous group.

Therefore, established members of the organization held certain stereotypes concerning Black applicants, which had not been tested before. Under the legislation of an Affirmative Action policy, however, members were being forced to interact with culturally diverse individuals and, as a result, were able to test the credibility of their previously held stereotypes. However, because of the educational level and qualifications of the Black members who took part in the study, the similarity between White and Black members was increased to some extent. This

increased the likelihood that stereotypes would be discredited. However, this might not necessarily be the case where Black candidates who do not have the same level of qualification and experience begin to enter the organization. Thus, although these first Black candidates were making a very positive contribution towards breaking down previous stereotypes, there was no guarantee that these stereotypes would not be reinforced by less qualified and less educated candidates.

The data corresponded with the theory put forward by authors such as Rens (1991), Cox (1993) and Gudykunst (1991), who suggested that the stereotypes individuals used to cope with ambiguity and anxiety were reevaluated and often found to be inaccurate. It was found in the data that although there were significant status differences both in the organization in general and on the flight in particular, negative outgroup stereotypes were being disconfirmed. Furthermore, because cooperation was so necessary for effective crew coordination, prevailing prejudiced attitudes decreased.

5.1.1.4. Attitudes.

It was indicated in the data that the attitudes of the White and Black members affected communication, and the climate in which communication took place. The attitudes of both White and Black pilots were predominantly a consequence of the political inequalities experienced in the past. Although the negative attitudes were not often overtly encountered, there had been isolated instances where Black pilots were confronted by very negative attitudes. Under such circumstances, Black pilots experienced extreme anxiety, especially when the negative attitude came from an individual of higher status and ranking.

In such situations, Black pilots were, firstly, very uncertain about how to interpret the situation, and secondly, very unsure of how to react. This caused interpersonal difficulties and tension.

The subjects commented as follows:

He (the Captain) didn't create a conversational atmosphere. So he was never really sure what his position was. And then a bit later the guy cracks a racial joke. Now this guy felt in an awkward position, because, you know, does he take offence or does he crack a joke back?

This kind of conflict in the cockpit was certainly a safety hazard. In particular such attitudes might have inhibited Black members from alerting the Captain to deviant information and at the same time may have caused all members of the flight crew to misinterpret messages. This corresponded with the theory which suggested that status differences complicate the communicative situation because the Black employee never knows when a comment, racial slur or joke might occur that will test the worker's ability to interact with the White employer (Brislin, 1991).

Gudykunst (1991) put forward several characteristics of the contact situation which could foster a positive attitude change. While some of these were present in the South African Airways context, others were not. Cooperation between individuals in the flight crew was vitally important for effective functioning on the flight deck. In this sense, the cooperative circumstances necessary for changing attitudes were present. There was also very little, if any, competition between groups in aviation.

Furthermore, intergroup contact had the potential for extending beyond the immediate situation, due to free time that pilots had during extended flights. Under these circumstances where pilots were together away from home, there was great potential for social interaction. In addition to this there was very strong support from the managerial side in favour of the interaction between culturally diverse individuals.

By contrast, several important aspects worked against the reevaluation of attitudes. First was the significant status differences between members of the ingroup and outgroup. This occurred both in and outside of the contact situation (the flight deck). However, status differences outside the contact situation were lessened to some extent as a result of the higher education of the Black candidates.

Second, were the extreme differences in competence levels of the members in the group. For example the difference between highly qualified and experienced Captains and Flight Engineers and less experienced and lower ranking First Officers. Finally, there was a very significant difference in the numbers of White members in comparison to the number of Black members in the organization. This emphasized the minority status of Black members.

Therefore, whereas there was some scope for decreasing negative attitudes, it was more likely that stereotypes would have been modified and negative attitudes would linger. Whereas a White pilot might have changed his stereotypes concerning Black pilots, for example, in the areas of ability and competence, he might still hold a very prejudiced attitude towards Black pilots which would not easily be diminished.

There were two additional areas which related to the theme of attitudes. The first was the occurrence of overbearing communication styles. There was some indication that Captains who perceived themselves as very much more qualified, and therefore of higher status than their Black colleagues, had a higher degree of overbearing communication style. It was found in the data that at times the Captains interrupted the Copilots and practically dismissed their statements. This overbearing manner might have caused interpersonal conflict on the flight deck. However, there was not much evidence of conflict actually developing at that stage. This was partly due to the power distance between Captain and First Officer. Thus, the First Officer would have

been reluctant to react negatively to being interrupted.

This corresponded with the second area which was concerned with status differences. Captains spoke more frequently with the Flight Engineers (who were of higher status than the Copilots), in terms of general or personal communication. Furthermore, the Captains spoke far more frequently than the other crew members. This was partly due to their leadership role, but also because of the higher level of status. This overbearing manner was not always perceived as such by the Copilots, however. This may have been due to the attitudes of the Copilots who might have perceived themselves as having lower status.

Overall it was verified in the data that the attitudes of the crew members were predominantly positive. From the few negative instances, however, it was evident that negative attitudes could have caused tension and interpersonal conflict on the flight deck. This could have severely impeded effective communication, and in the extreme detract from effective task completion. Under emergency conditions, negative attitudes could have contributed to miscommunication and endangered flight operations.

5.1.1.5. Language.

The literature indicates that language competence is not sufficient for effective communication. This however, does not detract from the importance of language competence. In the cockpit situation, pronunciation and intonation were important for mutual understanding between crew members.

It was found in the data that although Black pilots were instructed in English and completed their examinations and training in English, there was still some margin for error with regard to pronunciation and intonation. A slight mispronunciation of certain words might not only have

caused confusion and misunderstanding, but could also have delayed the communication process. This was indicated in the high number of misunderstandings and miscommunications in the "Critical Incidents" table. This could have been vital considering the time constraints placed on communication in the cockpit.

The checklist procedure is a case in point. In this particular instance, there was sufficient time available to clarify what the Copilot was trying to say, but under emergency conditions there might not have been sufficient time available for negotiation of meaning and pronunciation. A discrepancy in this checking process might have led to confusion and misunderstanding. Perhaps even more significantly, failure to check, or use of inappropriate jargon might have resulted in incorrect readings and consequent safety hazards. In this area in particular, pronunciation and intonation became important.

However, because the crew members were anticipating the answers to checklists and instruments, they already had some inclination as to what the other crew members would say. Correct pronunciation, however became crucial in an emergency situation where there was insufficient time to clarify further.

Language competence in the technical aspects of flight might also not be sufficient. Although culturally diverse members could learn the technical language and jargon, and overcome the difficulties of pronunciation in these areas, competence in the more general areas might not have been acquired so easily. Specifically, misunderstanding on the flight deck occurred around three areas. The first was where jargon was used in communication, the second was where crew members used inaccurate or vague communication and the third was where the Black pilots tended to take the communication at face value, or too literally.

An example of where the incorrect aviation jargon was used, and could have caused confusion and misunderstanding, was where the word "off" was used instead of the correct aviation term "disarm". Also the use of the word "normal" in "Okay I'm going to put mine on normal" was misleading and confusing. There was evidence to suggest that under stressful conditions, inexperienced pilots might have neglected to use the correct jargon, and in the case of Black pilots, for whom English was a second language, the completely incorrect term might have been used.

The second area of concern was the use of inaccurate or vague language. It was clear in the simulator sessions that this occurred mostly on the part of Captains and experienced pilots who were clear in their minds about what they would like to have said, but were not imparting this in a precise and accurate way. The third area was where the Captain and the Copilot misunderstood each other completely. This occurred mostly with regard to the subtleties of the English language, where some misinterpretation took place on the part of the Copilot and the Captain. In this kind of communication in particular, it seemed that the Black pilots communicated at face value. Captains therefore needed to ensure that their statements did not have more than one level of meaning, eg. "Are you happy to fly the aeroplane", which the Captain means as "Are you happy to continue flying the aeroplane?"

5.1.1.6. Leadership style.

The theory regarding this area suggested that Captains of flight crews were most effective when they combined concern with task with concern for the group. It was found in the data that the Captains in these scenarios seemed more concerned with the task. Evidence for this was found in the low number of instances in which the Captain invited input from his crew members. They often used leading or closed questions. These kinds of questions did not give the Copilot time to think, hurried the Copilot into responding and did not invite any real participation from the

other crew members. This might have been the result of a number of factors.

Firstly, due to the emergency situation in the simulator sessions, the crew members were more concerned with completing the task than under normal situations. However, under emergency situations, the Captain should have incorporated the input from his fellow crew members during the decision-making process. In addition to this, most of these Captains had learnt to fly in a military environment where the Captain was the ultimate authoritarian leader. Thus, adopting a more collective approach seemed difficult for most of these Captains. Although Captains included their crew members to some extent, they were likely to follow this process up to a point, but did not follow through.

Secondly, the inexperience of the Copilot might have encouraged the Captain to do most of the decision-making himself. At the same time, because of the language difference, and perhaps the nervousness of the Copilots, they might have been taking too long to give inputs. This could have encouraged the Captain to interrupt an input or refrain from asking for one.

Related to leadership style, was the nonverbal behaviour of the Captains. This appeared to have had a profound effect on the communicative behaviours of the other crew members, and the dynamics of the group in general. In crews where the Captain maintained a significant amount of eye contact with the other crew members, communication seemed to be more effective and more personal information was shared. This was indicated by the high incidence of communication outside the task situation in Crew C. (See Table 1.)

There was evidence in the data that Captains who were perceived as not paying attention or listening, were negatively evaluated to some extent, and there was some suggestion that the Captain might have been preoccupied with another task. It seemed vital however, that the Black

pilots felt that they were able to explore and learn as they flew, and that the Captains were open to this kind of process. It appeared that listening and responding to questions, regardless of whether they were appropriate or not, was important for the general repertoire between crew members. For example:

But the Captain did not answer his question, therefore (he) asked again. The Captain did not really seem to be listening.

5.1.2. Group level themes.

5.1.2.1. Cohesion and individual autonomy.

The flight crew was a highly cohesive group in which individual autonomy was neither encouraged, nor possible. As suggested by the theory, this might have led to the phenomena of "groupthink". This appeared to be significantly countered by the "watchdog" role of crew members - the commitment to checking and rechecking each other. This occurred mostly when commands were issued, or when the crew members were checking instruments and checklists. The words "check" and "affirm" were used most often, or phrases were actually repeated.

Also of crucial importance was assertiveness on the part of the Copilots. This was important for alerting the Captain to deviant information. The number of assertive behaviours on the part of the Copilots were minimal at this stage. This seemed to be mostly due to the inexperience of the Copilots.

5.1.2.2. Participation by crew members.

As suggested in the theory, participation in the group was the cornerstone of communication. Several issues were raised concerning participation, one of which was active listening. The high level of interruptions in some scenarios showed that in some instances, the Captains were not really listening to their Copilots. The Copilots themselves agreed that the Captains were not

listening at certain times, but indicated that an interruption could have been due to a time constraint in some cases. Without this understanding of the situation, however, an interruption might have been perceived in a very negative way.

A second issue was the area of personal disclosure and conversation outside the immediate task. Only one crew indicated any instances of interpersonal communication outside the immediate task. In this scenario, the Copilot was significantly more experienced than the other Copilots and so this might have been a determining factor. It is evident, however, that in this scenario, as suggested by the Johari Window theory, communication was more open, crew members were more relaxed and comfortable with one another and communication generally seemed more effective. The third issue, concerned information processing. It was found that all five crews showed no hesitation in clarifying, checking or seeking information.

5.1.2.3. Role structure and definition in the cockpit.

The roles in the cockpit were very tightly defined: Captain, First Officer and Flight Engineer. As a result, there was also a very strict adherence to the behaviours which were appropriate or inappropriate in those roles. For example, while the Captain was flying, the Copilot was expected to do the radio work and visa versa. Evidence showed, however, that the reversal of roles could only have taken place at the initiative of the Captain. Should the Copilot have tried to reverse roles, it would have constituted an infringement on the role boundaries and "territory" of the Captain.

It was particularly important that crew members were aware of their roles and the behaviours which those roles require. Insufficient role definition could lead to confusion, misunderstanding and conflict on the flight deck. Of particular intercultural significance was the perception of impenetrable boundaries. For example, roles could not readily be reversed or entwined. If any

crew member had to encroach on the role of the Captain, for example, interpersonal conflict was likely to occur. In the case of a Black pilot encroaching on roles, the consequences might have been more severe.

There was an emphasis on the role of the Captain as a leader. Although the final responsibility for the flight was vested in the Captain, the emphasis amongst Black members seemed to be on the collaboration and cooperation on the flight deck. In this sense, it was preferred that the Captain acted less as an authoritarian leader and more as a team leader. Since the final responsibility was with the Captain however, it was accepted that in some circumstances, the Captain would issue commands and make decisions independently of other crew members. Furthermore, the Captain was expected to be able to elicit the cooperation of his crew. The Captain also set the atmosphere on the flight deck by his use of interpersonal and leadership skills.

The Copilot on the other hand was the second person in command. This was the case regardless of the difference in status or experience between the Copilot and the Flight Engineer. Although this was not the case in this study, this could have caused some interpersonal conflict, especially in an intercultural encounter, where the Black person was perceived not only as inexperienced and junior in the cockpit, but also outside the cockpit, in society in general. This could have caused extreme tension, especially in circumstances where an inexperienced Copilot issued commands to an experienced Flight Engineer.

Furthermore, the Copilot was expected to cooperate with and support the Captain. In addition to this, however, the Copilot was expected to perform a "watchdog" type of role, where he monitored the actions of the Captain and Flight Engineer at all times. The Captain and Flight Engineer in this sense had to be constantly aware of the actions of the other crew members. This

essentially constituted a type of backup system where everyone was double-checking everyone else.

There also appeared to be a significant interplay between the different roles in the cockpit. This was evident in the team work approach to the flight deck. The emphasis here seemed to be on collaborative decision-making. Also, the Captain, Copilot and Flight Engineer identified themselves very much as part of a team. This emphasis on team work was especially prevalent amongst the Black pilots.

With regard to the Captain in the intercultural context, it was found that the Captain also played a mentoring role and at times even adopted a very paternalistic communication style. Due to the inexperience of the First Officers, it became necessary for the Captain to perform an instructing role as well as his usual role of leader. The high frequency of such communication styles can be seen in the "Critical Incidents" table. The style of instructing and leading became important in the discussion of intercultural communication because of the danger of misunderstanding and misinterpreting the behaviours of different cultural groups. For example, an overbearing manner could have been misinterpreted as condescending or patronizing and might have led to interpersonal conflict on the flight deck.

The analysis of the video tapes illuminated a range of behaviours associated with the instructing/coaching/nurturing role which the Captain assumed with an inexperienced First Officer. Firstly, the Captains tended to assume the role of instructor. This was a natural progression for the training Captains, but the same instructing role emerged in Captains who were not qualified instructors. The use of the instructing role became particularly frequent when procedural problems occurred. This was where most of the difficulties in crew cooperation and coordination took place or where the First Officer failed to comply with, or was unsure of the

necessary procedures. Under such circumstances the Captain would either directly remind the First Officer of the next procedure, or would ask the First Officer if he would like the next item, thereby implying that he had omitted an item from the procedure. There was evidence in the data that this instructing, and at times, nurturing role facilitated the acculturation process of the Black pilots. Through a trial-and-error process which was overseen by the Captain, the Copilot was able to absorb and learn the procedures first hand.

Furthermore, the Captain at times adopted a type of parenting role. This style was appropriate considering the inexperience of the First Officers. Although one might have expected the Black First Officer to perceive such a role as condescending or patronizing, it was indicated in the data that this was not the case. Furthermore, a nurturing parent role was observed under stressful circumstances.

Although the Captains maintained an instructing role during most of the complications encountered, there was evidence that under stressful conditions, or perhaps where the experienced Captain became frustrated with the inexperience of the First Officer, a somewhat overbearing manner came to the fore.

5.1.2.4. Norms.

There were very strict norms in SAA generally and in the cockpit specifically. In order to be fully accepted in the organization individuals were expected to abide by these norms and rules for behaviour. Furthermore, the norms prevailing in the organization led to a fairly stereotyped workforce with regard to what was expected of them. This indicated a limited margin for personal autonomy. It was found in the data that the flight crew was a highly cohesive group in which personal autonomy was not encouraged. It was vital that crew members behaved according to specific norms. A violation of these norms, for whatever reason, be it a result of

individual or cultural differences, was not tolerated.

The ranking order in the organization, and the norms which accompanied that ranking order were very standardized and fixed. Thus, these norms of behaviour did not alter with the inclusion of culturally diverse individuals. Accordingly, new members, whether they were White or Black, were expected to abide by the expectations of the organization.

Furthermore, adherence to particular norms required some degree of discipline. Individual crew members were required to fulfil their duties and not to venture outside of those duties, thereby encroaching on the role of another crew member. This implied that there was a degree of essential trust between crew members. Members trusted that fellow crew members would fulfil their specific duties thoroughly and to the best of their abilities and would not attempt to fulfil the role of another crew member. However, at the same time, all crew members were expected to observe the performance of other crew members, and in this way provided a backup system.

Other established norms in the cockpit were the Standard Operating Procedures, behaviours which ensured that everyone in the cockpit was in the same frame of mind and an effort towards making sure that all crew members had equal access to information. This could have been seen as a collectivistic attitude rather than an individualistic one and in this sense, Black candidates might contribute significantly to the norm of teamwork in the cockpit.

In this regard, it was observed that the Black members emphasized teamwork and mutual understanding to a larger degree than the White subjects. This might have indicated a higher inclination towards a collectivistic attitude, but at the same time might have been due to the more military history of the training of the White pilots, a military training which encouraged an authoritarian tendency.

Another norm concerned appropriate and inappropriate communication. For example, during take-offs and landings, there was an expectation that all communication would only be concerned with the flight and that idle conversation was inappropriate. At the same time, Captains expected their Copilots not to bother them with unnecessary information at such times. Subjects emphasized that on short trips, most of the flight consisted of take-offs and landings. During these times the cockpit was considered "sterile", that is, all communication was concerned with the flight only.

The final norm concerned the level of assertiveness which was acceptable or unacceptable in the organization in general and in the cockpit specifically. This level of assertiveness depended to a large extent on the ranking order and status of the individual in the organization at large. In particular, very junior pilots were not expected to put forward opinions concerning the management of the organization. In the cockpit for example, junior crew members were not expected to speculate on the abilities of crew members of a higher status and ranking than themselves. This was a very strong etiquette and once violated might have led not only to reinforcement of stereotypes, but also to interpersonal conflict and tension. There was a subtle difference between behaviour which was seen as precocious and behaviour which was considered to be assertive.

The interesting perspective here was that White instructors and trainers seemed to view over-assertiveness as an essentially "Black" phenomenon. This was partly based on the education and upbringing of the Black pilots which were perceived as contributing to a higher confidence and level of assertiveness than would be expected from the average Black candidate.

The instructors and trainers therefore appeared to expect Black pilots to tone down their level of assertiveness. The following comments illustrate the point:

There are norms which one gradually absorbs in the airline, and one of the norms is, yes that you are not going to expect a very junior man to make judgements on major policy issues like that. There is a code of behaviour in the cockpit and a) it's determined by rank structure, you are allowed to open up as your seniority increases. It's a very subtle thing, but you are expected to behave in a certain way.

To some extent this indicated an attempt to get Black pilots to behave as they were expected to behave, not only as very junior pilots, but also as Black, Affirmative Action candidates. This was evident in one instructor's comment, that in some situations it was necessary for the safety of the flight to be assertive, but that most of the time "it's better not to be that way".

This idea of assertiveness also overlapped into a behavioural domain. As suggested by the subjects, initiating action outside the limits of the Standard Operating Procedures without consulting the Captain first, would be considered as over-assertive behaviour and would be frowned upon by fellow crew members.

This idea of over-assertiveness was not perceived by the Black pilots. Rather, Black subjects were more concerned about the importance of assertiveness in the cockpit with regard to pointing out deviant information and checking on the actions of the Captain. The cockpit was seen as a place where conflict had to be avoided unless completely necessary, yet there was to be no hesitation in confronting fellow crew members at more appropriate moments.

In summary, it was suggested that culturally diverse members might not have naturally incorporated and accepted the norms outlined above. Therefore, adaptation to and acculturation of these norms was imperative for communication on the flight deck. It was found that Black pilots adhered to these norms with only minimal difficulty. However, future training may have to address difficulties that could be encountered with regard to less experienced, qualified or perhaps "Westernized" candidates.

5.1.2.5. Cultural differences.

Differences along the dimensions of intimacy of the relationships, the degree of formality, the degree of hierarchy present and the degree of deviation allowed, seemed to be related to some extent with dimensions of cultural variability. Between White and Black cultures there were differences along these four dimensions. The Black candidates did appear to place more emphasis on the intimacy of the interaction, but correlated with the White subjects along the lines of the formality and hierarchy on the flight deck. Along the dimension of deviation from the ideal, the Black pilots also seemed to accept this more than the White pilots. This might have been due to the higher collectivism on the part of the Black pilots than on the part of the White pilots.

a) Individualism versus collectivism.

Africans and Asians are considered to be more collectivistic than Whites (Hofstede, 1991). Therefore, it may be put forward that on the flight deck, the Black pilots would approach group functioning and group interaction from a more collectivistic perspective.

The findings of this research supported this. The Black pilots placed significant emphasis on team work, crew coordination and participation by all crew members. They also continually referred to the crew as a chain which was only as strong as its weakest link. Furthermore, there was an emphasis on the common goal of safe and efficient flight. The White pilots, however, did not place as much emphasis on collective functioning of the crew, and in cases where they did, it was usually a result of training which encouraged this type of interaction.

This was a very positive consequence of the cultural diversity, because of the recent emphasis on increased teamwork on the flight deck. This cultural difference may thus enhance communication on the flight deck.

b) Power distance.

Finally, it was observed that the cockpit and SAA as an organization at large conformed to higher power distance. This observation was based on the fact that members of the organization accepted that power was distributed unequally in the organization.

Specifically, on the flight deck there was a very high power distance in the strict hierarchy according to rank and position. The White subjects seemed to place a stronger emphasis on status and rank differences, and the appropriate behaviours attached to them. On the other hand, the Black pilots were more concerned that the Captains took their opinions into consideration, regardless of how junior they were. The Black pilots also placed significant emphasis on assertiveness in the cockpit regardless of status and rank differences.

This had two consequences. Firstly, the White, experienced and established pilots tended to see this behaviour as arrogant and overassertive as well as overstepping the boundaries of appropriate role behaviour. This may have reinforced previous negative stereotypes and prejudices. Secondly in time, communication between crew members can actually be enhanced and members may be encouraged to disagree with the Captain when necessary for the safety of the flight.

5.1.2.6. Standard Operating Procedures.

Under stressful or uncertain conditions, the crew members tended to rely more heavily on the Standard Operating Procedures. This adherence could be seen as an uncertainty reduction mechanism. The crew members relied more heavily on SOP's under two kinds of stressful conditions. The first was when there was anxiety or uncertainty concerning the technical aspects of the flight. The critical incidents described in Tables 2 to 6 show that under emergency situations, most of the discussion revolves around the necessary procedures. The second was where there was uncertainty concerning the interpersonal relationships on the flight deck. Where

interpersonal relationships on the flight deck were uncertain and there was very little communication outside that which concerned the flight, crew members were more likely to be uncertain about what was expected of them, as well as about the likes and dislikes of the Captain. Under these circumstances, reliance on Standard Operating Procedures lessened the anxiety and ambiguity of the situation. Crew members knew what was expected of them and by concentrating on doing the job, anxiety about interpersonal relationships was lessened. The transcripts of the videos indicated that most of the communication centres around the Standard Operating Procedures. Little communication outside of the task occurred.

With regard to general communication, the subjects indicated that adherence to the Standard Operating Procedures made communication far more efficient. In terms of intercultural communication, this was particularly important since members could simply fall back on operating procedures and the margin of error was lessened.

This also fell in line with Borden's (1991) suggestion that in new situations there is uncertainty concerning what to say. In such situations, individuals might have fallen back on their stereotypes. In the cockpit situation, crew members could rely on standard procedures. With specific regard to intercultural situations, Gudykunst and Ting-Toomey (1988) reported that it was more difficult to know how to initiate a conversation and to know what to talk about when initiating a conversation with a person who was culturally dissimilar.

5.1.2.7. Crew composition.

The crew composition is important to our understanding of the communication between crew members because the changing crew composition limits the amount of contact time between crew members. Uncertainty about the likes and dislikes of fellow crew members appeared to impact on levels of confidence, assertiveness and general psychological comfort in the cockpit. With a

constantly changing crew, uncertainty in these areas was never lessened.

However, it was observed that crew members seemed to accept that they would constantly be flying with different people and viewed this as a learning opportunity, and an occasion for engaging in interaction with a diversity of personalities.

5.1.3. Organizational level themes.

5.1.3.1. Affirmative Action policy.

The context of Affirmative Action had an influence on the expectations and stereotypes which established members held. Established members of the organization tended to correlate Black pilots with the transitional period of Affirmative Action, although this was lessened to some extent by the level of experience and qualifications of the Black pilots who had become part of SAA.

This was in line with the views of Brislin (1981), Knapp, Enninger and Knapp-Potthof (1987) and DeBryn (1992), who suggested that historical, social and political surroundings impact on communication. In this case there was a particular emphasis on the fact that the Black pilots were part of a transitional period.

The most overriding opinion, however, seemed to be that Black pilots would anticipate privileged treatment and rapid promotion. Since this was a gross infringement on the norm of strict rank structures and promotion procedures, it was likely to cause resentment towards Black individuals. In particular, this would threaten the strict status hierarchy in the cockpit, and in turn seriously impinge on positive and effective communication.

Both the established members, as well as the incoming Black pilots, were acutely aware of the uniqueness of the situation. From the Black pilots' point of view, a significant amount of pressure was imposed on these individuals to perform at their peak and to some extent "prove" themselves to the organization and its members. There was a prevailing air of "setting the stage" for those who were likely to follow. An extreme effort was made on the part of Black pilots to compensate for and change negative stereotypes that were already established amongst White members of the organization.

Regarding the rapid promotion of Black pilots in the organization, tension was experienced by the instructors and trainers who were responsible for ensuring that a high standard of performance was maintained. The Captains emphasized that the Affirmative Action policy followed by SAA could not allow a drop in standard because of the emphasis on safety in the aviation environment. The following comments highlight this tension:

I can't afford to send a substandard product onto the line. But now if I don't send the guy out, what is the company going to do? Are they going to come back at me and say "why"? Are they going to accept the explanation on why I don't want the guy to go? I'm not happy with it. It puts you in a difficult situation because it is my signature whether he goes or he doesn't.

5.1.3.2. Social interaction.

Cox (1993) emphasized that social networks were important channels for communication in organizations and for the personal efficacy of organization members. However, Cox also stressed that in social systems where participants had been members of one predominant culture group, it was difficult for members of different culture groups to become part of those social networks.

In the data, in relation to South African Airways it was found that social interaction occurred on an informal basis during extended flights where crew members were together away from their home environments. During this time, crew members had the opportunity to interact on an

informal social level and therefore were able to get to know one another in a different environment to that which prevailed in the cockpit situation.

This kind of interaction made a significant contribution to the breaking down of social stereotypes which surrounded interracial and interethnic encounters. In such social interaction, which to some extent was unique in SAA, and was perceived as such by all the racial groups included, some anxiety and uncertainty concerning the situation might have prevailed. However, it appeared that neither the White, nor the Black candidates overreacted to the situation. Instead, both parties seemed to be taking the transition into their stride. The White pilots included the Black pilots in their activities as they would with any newcomer to the situation.

This was seen particularly in the drinking ritual. Crew members would usually socialize during their leisure time on overseas flights, or extended internal flights. This ritual seemed to contribute significantly to the cohesion of the flight crew and it was during these drinking bouts that much informal sharing of personal information and experiences took place. As previously suggested by the Johari Window representation, this contributed significantly to the cohesion and interaction of the flight crew.

The point of significance appeared to be the fact that some crew members did not consume alcohol. These individuals have notoriously been considered outsiders and have often been ridiculed because of their decision to abstain. In circumstances where the crew member not only abstained from alcohol, but was also a member of a minority group, the distinction between the "ingroup" (those crew members who consumed alcohol and were involved in the social interaction between crew members) and the "outgroup" (those who abstained from alcohol) became even clearer.

Some Black crew members who usually abstained, however, seemed to find it easier to adapt to the expectations of fellow crew members and take part in the social drinking rituals. This might have been a result of the desire to become part of the ingroup and establish common bonds with fellow crew members of all cultural origins, thereby facilitating the acculturation process.

5.1.3.3. Adaptation and acculturation.

a). Adaptation.

Training. There was an emphasis on the organization adapting and learning from this transitional period. In the past, instructors dealt with a fairly homogenous group of trainees. With the inclusion of culturally diverse individuals, this was no longer the case. The inclination was toward improving the training programs, being aware of cultural differences and addressing those differences, and making sure that nothing was taken for granted. This would become particularly salient when less experienced and qualified candidates were selected because the overarching concern was that the standard of flying was not lowered. The emphasis therefore shifted towards bridging training necessary for preparing new members for the actual flying training.

All the subjects acknowledged the need for adaptation and accommodation in terms of the training programs. This was specifically in relation to the pace and quality of the lectures. In this sense, the Black pilots did not have much exposure to certain aspects of the training, and so learning did not come as easily as it did to the White pilots. Furthermore, in the training context, the instructor had a significant impact on the learning process of the subjects, as well as their general self-confidence. It was suggested that instructors could either make or break the candidate's confidence, and later performance in the training.

Technical. Adaptation was also expected to take place on a technical level. The adaptation on this level was likely to occur on the part of Black pilots only, since the technical aspects of the aviation environment displayed little scope for change. The new members were expected to adapt to a new organization, new cockpit environment and a different crew concept. In particular, adaptation in this sense involved becoming familiar with the procedures and limitations involved with the aircraft. Furthermore, the size of the aircraft seemed to be a common factor to which all the subjects had to adapt.

Interpersonal. The theory concerning adaptation stressed that communication was at the centre of adaptation, and that the cross-cultural adaptation process was a process of achieving the communication capacities necessary for new members to be functional in the host culture. Thus, one learnt to communicate by communicating (Kim, 1988).

The adaptation with regard to interpersonal relationships in SAA appeared to be taking place on the part of both established members, and new, Black members. Established members were very aware of the change in the composition of the fleet, and at the same time were aware that there were differences between themselves and incoming pilots. For example:

In a way I think it's different. I mean when you go out for a meal it's not the same as with the boys or the females, it's different. You talk about different things.

The emphasis therefore still seemed to be on differences, rather than mutually accepted goals and values. This could have been a result of strict norms for behaviour and the stressing of certain values, but at the same time seemed to be result of previous historical factors surrounding intercultural encounters as suggested previously. Although one might have expected a perception of Black members as part of an outgroup encroaching on the territory of the ingroup, this was not expressed in any overt way.

More significantly, however, the subjects expressed a sense of wariness concerning culturally diverse individuals and seemed more aware of communication difficulties and their consequences for interaction. The emphasis seemed to be on the idea that there was as much of an adjustment for White pilots as for the Black pilots.

Although the latter process (work values from both cultures being incorporated as opposed to adapting to a dominant culture) might have taken place in other more "open" organizations, culturally diverse individuals in SAA had to adapt to a dominant culture, partly because of the strict roles and norms enforced in the organization.

Increased contact over time was seen to contribute to enhanced interpersonal relationships. This was due to the expectation that the preconceptions and stereotypes would be modified, and suspicions would be lessened. However, there was a strong perception that there were significant differences between the White and Black members and, to some extent, these differences might never be understood. For example:

I just feel there are big differences. They're definitely not stupid, they're very capable, but they are different. Some of the differences you understand, but some, I'd say 70 percent of the differences you don't understand because you don't understand the culture, the thinking process.

The fact that these differences would have to be accepted and incorporated into an interpersonal relationship seemed to be the general opinion. Regarding the White pilots in particular, there was heightened awareness of the language and social jargon used in everyday conversation. This was specifically in relation to the use of racist language and racial jokes. This essentially seemed to involve a reevaluation of the appropriateness of past behaviours and attitudes. To some extent, White members expected Black members to view racial language in an accepting kind of way, and not to react defensively. The following comments indicated this:

So one has to be careful. I mean racial jokes are sensitive and when you're sitting with these guys you just have to be careful what you say. Although I'm sure these guys will take it in the way you mean it, they're not going to take it offensively.

However, it was found that although Black members did not always take racial language offensively, it could have caused tension and anxiety in the interpersonal relationship. Furthermore, when racial language was used Black subjects became uncertain about how to react, as to whether to be assertive or to ignore racial slurs.

In line with the hypothesis that the respondent would assume a greater burden of adaptive behaviour when the initiator has greater status and power, it was evident that for the Black subjects, adaption seemed to be more stressful. Adaptation for the Black pilots extended beyond the interpersonal relationships into an adaptation to the entire organization. The size of the organization seemed to be the most important factor. Here the emphasis was on the family atmosphere in previous organizations, which was difficult to achieve in an organization the size of SAA. With regard to this observation, there was a further implication that in smaller organizations, members developed a deeper understanding of each other and were more aware of the likes and dislikes of individual crew members.

In SAA there were too many crew members for this kind of understanding to occur and so this constituted a significant adjustment for the Black members. Black members stressed, however, that the impact of this was lessened to some extent by the friendliness and helpfulness of colleagues in the organization. An overarching factor seemed to be the notion of a common enthusiasm for flying amongst members of the organization. It was this love for flying that provided the common characteristic essential for group functioning and which to some extent, facilitated interaction and compensated for cultural differences.

Factors limiting the adaptation process.

Several external circumstances made the adaptation process difficult for Black subjects. External pressures such as finding accommodation for families, inadequate settling in periods and insufficient time to settle into the new environment created tensions that affected the smooth running of the adaptation process.

b). Acculturation.

All subjects emphasized the idea of acculturation, of the process of learning the norms, roles and structures inherent to the organization. Evidence that an acculturation process took place was seen by the fact that the subject who had already been trained by SAA found the acculturation process far easier. Furthermore, the acculturation process entailed not only learning new norms and roles, but also establishing how and where they "fitted into" the organization.

SAA as an organization might be seen as the host culture. The emphasis in the data appeared to be more on the process of acculturation than on deculturation, although it could be assumed that if acculturation took place, deculturation, in terms of unlearning previous behavioural patterns, must have taken place. Furthermore, the organization exerted an enormous amount of pressure on new members to conform. This was evident in one subject's words"

Now there are certain procedures that one has to follow and if you don't follow these procedures, then you're out of here.

Furthermore, new-comers who were better educated and better informed about the host culture found the acculturation process easier. It is suggested that the subjects for this study found the acculturation process easier than the individual with a lower education and level of experience in aviation.

Theory suggests that when new-comers are from a similar culture to the host culture, they begin the adaptation process with a far greater advantage. This explains in part why the subject who had already trained with SAA found that acculturation for him was far easier. Even though this individual did not come from a similar culture, he had already adapted to some point and further acculturation was therefore easier.

Furthermore, theory suggests that the ease of the acculturation process increases when members are open minded and receptive towards the host culture. It appeared that all the subjects were open to SAA. This was seen in their openness towards discussion, as well as their willingness to reevaluate attitudes and stereotypes. Also, the adaptation and acculturation process was fostered by a better preparedness for change. The subjects all showed a significant willingness to change. This preparedness for change was illustrated and justified in the following quote from a Black pilot:

SAA is one of the top airlines in the world and the way we operate is very much in line with other airlines in the world. So if we try to change that direction I think that would be very much detrimental to the airline and also to us. Maybe sometime in the future I would like to join one of the other airlines. If I approach it in the same way that SAA is doing, then I don't have a problem. So I'm quite happy to change to fit in with SAA.

CHAPTER 6

CONCLUSIONS AND RECOMMENDATIONS

6.1. CONCLUSIONS.

Several conclusions can be drawn from the findings presented in this thesis. The Black subjects observed were very experienced and qualified in comparison with the average Black candidate and this profoundly affected the expectations and attitudes of the White members of the organization. As a result, the general comments of the White subjects reflected a positive rather than negative reaction.

However, the political climate in general, and the transitional phase in which South African Airways finds itself, created some mutual suspicion and mistrust. There was, however, little evidence that this has any significantly negative effect on interaction and communication.

At the individual level, factors such as stereotypes, attitudes and expectations did affect interaction in initial contact situations. Particularly, these affected the climate in which communication took place. The emphasis, however, was on the modification of these stereotypes, attitudes and expectations, and upon entering the cockpit, a determined effort was made to level out differences, and to concentrate upon the tasks at hand. Although the conditions in the organization at times contributed towards the breaking down of negative attitudes, there were some aspects, such as the status differences which were inherent to the organization, which could not be changed.

In the communication process, difficulties were mostly encountered where incorrect pronunciation and jargon was used, where there was more than one level of meaning.

and where the communication was vague and unspecific. These were areas in which additional effort will have to be made by all members of the organization. For example, Black pilots will also have to be included in elocution lessons. Captains in particular need to concentrate on communicating clearly and clarifying their statements.

Furthermore, the leadership styles of the Captains were sometimes fairly authoritarian, although this could have been due to the Copilots' inexperience. The result, however, was that there was not much real inclusion of the other crew members in decision-making. At times the Captain was very overbearing and even patronizing.

At the group level, it was found that participation amongst crew members remained rigid and superficial. Where communication outside of the immediate task did occur, it was on the initiation of the Captain. The adherence to roles, and the norms of behaviour which accompanied those roles was strongly emphasized in the organization and in the cockpit. New members, regardless of cultural origin, were expected to adapt and conform to those roles and norms. Deviation from the norm was highly sanctioned.

In terms of cultural differences, the Black subjects were inclined towards a higher level of collectivism, and in this way positively contributed to the teamwork approach on the flight deck.

At the organizational level, the process of adaptation and acculturation, was very significant. Because there was little scope for cultural differences at a group level, and personal autonomy at an individual level, there was not much emphasis on the acceptance and incorporation of cultural differences. Rather the prevailing idea was that cultural differences which could negatively affect group process and communication, should be eliminated. Black candidates, therefore, were expected to adapt to the new environment. The result was that acculturation

became an important process for the Black subjects.

6.2. RECOMMENDATIONS.

Although communication difficulties did occur, the frequency of these difficulties was lower than expected. This was a result of the high calibre of the subjects who were involved in this study. This is likely to change when less experienced and qualified pilots are employed. South African Airways as an organisation will be recruiting pilots who have no flying experience and perhaps only a DET education. Therefore, these pilots will need additional bridging training. Higher levels of miscommunication, misunderstanding and general communication difficulties may be encountered.

Interpersonal skills training should address the effects of stereotyping and negative attitudes on the flight deck. A better understanding of cultural differences, as well as unmet expectations should also be dealt with. Specifically, the leadership styles of the Captains should be analysed and perhaps modified towards a more collectivistic approach.

The organization in general should attempt to make the acculturation process for new members as uncomplicated as possible. Particularly, SAA should focus on the notion that adaptation is a two way process in which both the organization and the individual have a part to play. The general mindset is that cultural differences will negatively affect communication and should therefore be eradicated. However, when cultural differences are understood and incorporated into the general work ethos, greater creativity and productivity may result.

The high level of education, experience and qualifications of the Black subjects involved in this study have significantly influenced the results of this research. Therefore, further research will have to be undertaken, to account for those Black candidates who enter the organization with zero flying hours. Their experiences, expectations and needs, and the quality of their interactions with other members of the organization are likely to be very different from those of the subjects involved in this study.

Research in these areas will contribute to a theory base which contains extensive information on cultural differences, factors affecting intercultural communication and the processes of adaptation and acculturation, but which often lacks a practical application. In particular, theory is often difficult to relate to the aviation context.

Finally, recommendations can be made regarding the multi-method approach used in this study. Triangulation has been used to improve the accuracy of the researcher's interpretations. One aspect of this triangulation method involved the use of the subjects' own interpretations of the data. This method might be extended by using focus groups and incorporating the subjects to a greater extent.

CHAPTER 7.

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APPENDIX. A.

Transcript - Crew A.

Capt. Okay see them on the right? Could we have the check list please?

Copilot. Okay, it says. Naycelle anti-ice.

Capt. Off.

Copilot. Aileron rudder trim.

Capt. Okay, we've got five degrees here so let's put it on because we've got visible moisture. Thank you.

Copilot. Electrical.

Capt. No lights set to normal.

Copilot. Bleed Air valve switcher.

Capt. Checked -open.

Copilot. Hydraulics.

Capt. Auto normal.

Copilot. Doors.

Capt. Closed.

Copilot. Ground-equipment.

Capt. Clear.

Copilot. After-start checklist complete.

Capt. Okay, it's all yours.

Smuts ground, Springbok 2 whatever we are uh taxi clearance.

What are we?

Eng. 239.

ATC Roger Springbok 239. Taxi holding runway zero three.

Capt. Springbok 239. Clear taxi. Clear this side.

Copilot. Thank you.

Cabin. Good evening Captain, the cabin is sterile and everybody's ready for take-off.

Capt. Thanks Mike.

Eng. Captain, I see the instrument monitoring lights - both sides are illuminated.

Copilot. Okay, I'm going to put mine on normal.

Capt. Okay, would you like some flap?

Copilot. Okay, uh, 10 flap please.

Capt. Okay, selecting 10 flap, and 10 flap is running.

Okay, we have 10 - 10 with the green. Would you like me to check the controls?

Copilot. Yes please.

Capt. Okay, ready (To Engineer)

Eng. Yes, skipper.

Capt. Okay, and on left, left aileron up, left spoiler up, right aileron down zero right. Right aileron up, right spoiler up, left aileron down, Zero forward, full deflection, zero coming back, full deflection, zero, rudders left first.

Copilot. Okay.

Capt. Left rudder, full deflection, and zero going right.

Copilot. Okay.

Capt. Full deflection, and zero. Would you like me to review the card?

Copilot. Review the card.

Capt. Okay for this takeoff we require. 1.47. Reduce thrust which will come in - thanks.

Eng. Okay.

Capt. V1 129 129 rotate 129 V2 146 186 226 Target rotation attitude 15% we require ten flaps we have 10 flaps. 10 - 10 green lights, zero dump time, 2 and 3 quarter units, which is not set, and I will set now. Switch set light extinguished.

Copilot. Thank you.

Capt. Okay if you would like to do RTO and.....

Copilot. Okay.

Capt. Engine - out after take-off.

Copilot. After 100 knots, this will be a goal orientated take-off. However, in the event of a decision to stop before V1, which a hundred and 25

Capt. No 129 knots.

Copilot. No 129 knots. I will close thrust power levers simultaneously and then apply full-brakes. Then raise speed brake manually then use reverse thrust simultaneously.

Capt. Okay then...

Copilot. Okay I'll do that again.

Capt. No, that's okay.

Copilot. After a hundred knots this will be a goal orientated takeoff however in the decision to stop before V1 I will simultaneously close thrust levers and apply full brakes. Raise speed brake manually and use reverse thrust asymmetrically.

Capt. On symmetrical engines. Okay. Let's stop over here. This is our holding point. Pause. Okay and your engine out.

Copilot. Then the

Capt. Are you happy with that. Would you like me to go through that for you.

Copilot. Yes please.

Capt. Okay, contact ATC soonest. Climb straight ahead on runway heading to 5-5 nautical miles. Fifteen degree bank then right to November Lima, which is set on both ADFs, to 6400 feet. And once clear we'll climb to 7800 feet.

Copilot. Okay that checked.

Capt. Would you like me to review the ATC clearance, the Rhino. The Rhino to Alfa, which is climb straight ahead, 5-5 DME, turn right to New Lago cross CTR boundary, above 8000 feet, which is no problem for us. Climbing to flight level 90 which is set. When instructed by ATC, climb to flight level 130 at flight level 130 turn right, on flight plan route. Which is

Victor Delta which is set on both ADF's on standby.
 Okay are you happy?

Copilot. Yes, I'm happy.

Capt. Okay and before takeoff, checklist to the line, please

Eng. Okay, let's just have a look at this instrument light here.
 See that, the instrument monitoring light.

Capt. Ja.

Eng. What is it on? It shouldn't be on, hey?

Capt. It shouldn't be, but it just shows

Eng. Is it a snag or?

Capt. It was on when we got in. I assumed it was a simulator snag.

Eng. (to Captain) We can't reset it - hey.
 And your side skipper?

Capt. It shouldn't actually go off when you switch the light switch onto dim.

Eng. Oh, I see yes.
 No, No, that's dim there.

Capt. Is that the dim?

Eng. Yes, that's the dim position there.

Capt. Jeepers, it's helluva dim.

Eng. Yes, that's why I'm saying I'm putting it on there, all right so we're going to live with this.

Capt. Okay, we're going to live with this. The instrument monitor just tells you there's a power loss to your instrument warning.

Eng. Okay, I just want to make sure that we're happy to live with it okay.

Capt. Okay.

Eng. Before takeoff, checklist says. Flight instruments aligned.

Capt. Aligned, no flags.

Eng. Flaps.

Capt. 10, 10, green light.

Eng. All green my side. Stabilizer trim.

Capt. Check stabilize trim what are we 2 and 3 quarter units, switch set, light extinguished.

Eng. Thank you. Galley power is on. APU off. Fuel is set for take off and the heat is off.
 Airconditioning and pressurization is set and auto. Annunciator lights are checked at the back.

Capt. Checked in the front.

Eng. Take off data.

Capt. Reviewed.

Eng. Take off briefing.

Capt. Complete.

Eng. Before take off checklist completed to the line.

Capt. Cabin crew is alerted.

Eng. Thank you.

Capt. What are we? 239? Springbok, 239 is ready for take off.

ATC The wind is 130/5 knots. The visibility at the end of the runway is decreasing and you are cleared for take off.

Capt. Thank you. Springbok 239 cleared for takeoff.

And he said the visibility at the end of the runway is decreasing.

Eng. Do you want to consider a full thrust takeoff?

Capt. No, we are so light, it won't matter that much. Are you happy with that?

Copilot. Yes, I'm happy with that, thank you.

Capt. Okay, do you want some lights?

Copilot. Yes all the lights please.

Eng. I'm just going to dim this light as well okay? Skipper? Okay, Skipper? Are you happy with that?

Capt. Yes, fine.

Can we have the before takeoff checklist to body gear steering.

Eng. OK below the line says cabin crew.

Capt. Alerted.

Eng. Landing and strobe lights.

Capt. ON.

Eng. INS and transponder.

Capt. Set.

Eng. Pack valves - all off. Ignition - flight start. Standing by body gear steering and take off clearance.

Capt. And Springbok 239 is standing by take off clearance.

ATC Springbok 239 is cleared for takeoff.

Capt. Springbok 239 cleared for takeoff.

Capt. OK for body gear.

Copilot. Body gear off.

Capt. Disarmed.

Eng. Take off clearance.

Capt. Obtained.

Eng. OK before take off checklist completed.

Capt. Thank you we are cleared for takeoff.

Copilot. Are we cleared for rolling take-off?

Set reduce takeoff please.

Eng. Setting. Trust set.

Capt. 80 knots.

Copilot. Checked.

Capt. V1 Rotate 15 degrees.

Positive climb.

Copilot. Gear up please.

Capt. Selected up.

Indicated airspeed. Would you like...

Copilot. Indicated airspeed?

Capt. Okay, indicated airspeed and drift angle is zero.

Capt. Okay, Climb thrust?

Copilot. Climb thrust please.

Eng. Setting.

Capt. 1000 feet to go.

Copilot. Checks.

Capt. You're clear to go.

ATC Springbok 239, climb 130.

Capt. Climb level 130.

Eng. Climb thrust set.

Capt. Uh, Okay.

Copilot. Captain turn me right to

Capt. Roger.

Copilot. November Lima.

Capt. 1013.

Copilot. ...013.

Capt. Still zero drift.

Copilot. Turn right please heading 089.

Copilot. 089. Then at 130 uh, through 100.

ATC. Springbok 239, 1267 area.

Capt. Roger 1267.

Area Springbok 239, Good morning.

ATC Springbok 239 Good morning. Climb level 290.

Capt. Level 290.

Level 290. (putting it in)

Copilot. 290

Capt. Level 290 set

Eng. Checks

Copilot. I see that

Flaps five please.

Capt. Okay we're going we need to accelerate a little bit more. . Okay would you like vertical speed?

Copilot. Vertical speed please.

Capt. I'm going to give you about 1 500 feet a minute.

Copilot. Okay

Capt. At flight level 130 further right, further right

Capt. Okay we're going to (setting beacons)
Let me find vector Delta, about 164

Copilot. 164

Capt. Both ADF's on 170 approximately 170 at the moment for Victor Delta.

Copilot. Okay, thank you
Give me flap five

Capt. Okay

Copilot. Flaps five

Capt. Flaps fine selected and running

Pause

Five five green.

Copilot. Flaps up uh flaps.

Capt. Flap one selected.
Okay just remember your speed, hey.

Copilot. Yes sir, OK.

Capt. It's very light, so it's going like a homesick angel.

Copilot. And flaps up please.

Capt. OK let's wait until it gets to one first before we select flaps.

Copilot. OK

Capt. Just remember your speed. 250 at this stage is your limiting speed. Until the flaps are at one, and then it's 275. OK flaps selected up.

Copilot. Mumbling, sees captain move, wants to ask something but doesn't know what to ask.

Copilot. Flaps up.

Capt. And I'm giving you 290, flaps up lights out.
Would you like PDC or PMS rather.

Copilot. PMS, PMS.

Capt. Old habits die hard. Auto throttle.

Copilot. Auto throttle coming on.

Eng. OK.

Capt. Thanks.

Capt. OK we cleared level 290 PMS has been selected.

Eng. OK after take off checklist has been completed.

Capt. Thanks.

Eng. Thank you sir.

Capt. OK Nacelle anti-ice can go off.

Cabin Passenger has had a heart attack.

Capt. Is he in a bad way?

Cabin. We need to get on the ground asap.

Capt. OK.
(to ATC) Jo'burg. Springbok 239

ATC Springbok 239 go ahead.

Capt. Could we have your latest weather please?

ATC Roger, at moment RVR 210 temp 5 QNH1029 and the surface wind is calm.

Capt. Roger thank you.
(to crew) OK guys what do think here. Doesn't look as though we can go back to Jo'burg.

Copilot. No I don't think so.

Capt. With 210 meters we're just got to get to Durban, I think as quickly as possible. Our alternatives are Durban, Bloemfontein. They're about a much of a muchness in differences. What do you think?

Copilot. Durban um I think Durban is....

Capt. There's not a lot of difference.

Copilot. Ja, not at this present stage.

Capt. What about Waterkloof?

Copilot. Waterkloof is also misty.

Capt. Ja, they had mist at Waterkloof as well. Also reported mist. Johannesburg Springbok 239 could we have the Waterkloof weather please.

ATC Standby, I'll get through to them.

Capt. Personally I think the best thing we can do is get through to Durban as quickly as possible.

Copilot. Yes as quickly as possible.

Capt. So let's just put up our airspeed a little bit.

Eng. Skipper do you want to just make sure this guys put on oxygen?

Capt. I think that might be a good idea.

Eng. I'll go and speak to them OK?

Capt. I'm going to give you manual climb at 340 knots.

Copilot. (simultaneously) 340 knots, thank you.

Capt. I don't at this stage, think there's much chance of us getting back to Johannesburg. Waterkloof was reported misty as well. I think our best bet is to continue as fast as we can to Durban.

Copilot. To Durban.

Eng. Roger OK.

Capt. I'm going to talk to our company quickly.

Copilot. OK.

Capt. Springbok Jo'burg 239.

Company Springbok 239. Go ahead.

Capt. Roger. We have a problem on board where a passenger's had a heart attack, at the moment they say the Johannesburg weather is deteriorating and is below limits for a landing. We're finding out what Waterkloof weather is like but if doesn't look like, um

like it's much good. It looks as though our only alternative is to continue to Durban which we will probably be doing and I'll keep you posted.

Company Springbok 239 Roger.

Copilot. But then aren't we CAT 3 rated on this aircraft?

Capt. Ja, CAT 2 is 350 meters.

Copilot. 350 meters and CAT 3?

Capt. CAT 3200 meters.

Copilot. 200 meters.

Capt. OK.

So.. they say 210 meters.

Copilot. 210 meters.

Capt. I'm just checking this, 03 left, CAT 2 only in Jo'burg, no CAT 3 in Jo'burg.

Eng. No, there's no CAT 3 there, ja.

ATC 239 Johannesburg.

Capt. Go ahead.

ATC Waterkloof weather very much the same as Jan Smuts, Bloem and Durban are CAVOK. Have you got that?

Capt. Roger thank you. Just to keep you advised we have uh, a passenger on board who's had a heart attack and we need to get him on the ground as soon as possible. We'd like you to possibly advise Durban ATC that we have such a situation on board and I'm going to speak to our company to make sure that they have an ambulance waiting for us immediately. I'd like you to ask them to make sure there's no delay for our landing.

ATC. Roger from present position direct DNV - What level would you like?

Capt. Ah, level 290 would be nice thank you and direct DNV. Thank you. Springbok 239.

ATC Direct DNV and level 290, thank you.

Capt. He's cleared us direct which is 2-4 Alpha.

Copilot. 2-4 Alpha.

Capt. Should be about the same about 164, 165 is the heading.

Copilot. 165.

Capt. And you're still on heading would you like to take INS?

Copilot. Uh, affirm.

Capt. OK NAV you've got NAV green.

Copilot. mumbles.

Capt. OK I think use the autopilot if you can to um...

Copilot. OK I'll use autopilot B.

Capt. Springbok Johannesburg Springbok 239.

ATC Springbok 239 go ahead.

Capt. Roger we're unable to go to Johannesburg and we're going to have to continue to Durban. I'd

like to please advise Durban that we're going to need an ambulance to meet the aircraft and we're also going to require a doctor to meet the aircraft. This passenger apparently is in a bad way.

Eng. (simultaneously) Standby.

Capt. We are climbing through level 290.

Copilot. 290 Selecting autopilot.

company (simultaneously) Ambulance will be at Durban for Addington hospital.

Capt. OK the autopilot's are out. Are you flying the aeroplane?

Copilot. Yes, I'm flying the aeroplane. First, we went through level 290.

Capt. OK.

Eng. Skipper do you want to change the cruise schedule on the PMS there please.

Capt. Oh, yes OK I'll do that.

Eng. That's why we're um... maybe to 888.

Capt. Oh,... why not. That's nice and fast. You're got 88 in it.

Eng. OK, if you can stick the lot in it now, we'll probably get away with the auto throttle engaged.

Capt. OK we gonna think about this. We wont be able to do a low speed descent. We'll have to do a high speed descent.

Copilot. Affirm.

Capt. Hopefully by this time they will have advised. Try and stay at level 290.

Copilot. 290.

Capt. OK your auto throttle is out.

Eng. No the autopilot as well.

Copilot. Autopilot is off. I just want to get to level 290 and then I will put the autopilot in again.

Capt. OK, I'm going to speak to the cabin crew in the front.
(To Cabin crew)- We think we have about another 30 minutes. We have no alternative. We have advised them there will be an ambulance and a doctor to get him to.. or preferably a helicopter to get him to Addington Hospital. We really have no alternative at all. We can't go anywhere else other than to Durban. Jo'burg as you're probably aware is closed.

Eng. Skipper you might like to think about the alternative because we'll be using a lot more fuel now flying lower, and flying fast. Uh, I'm not sure I haven't got a SITA in front of me, but ... so are you going to be happy to say with Durban.

Capt. Durban is CAVOK.

Copilot. CAVOK.

Capt. So you're happy with Durban?

Eng. And the cabin shouldn't be a problem if you want we want to do a high speed descent.

Capt. Do you want to go higher?

Eng. No that's fine.

Capt. Are you happy to stay here?

Eng. Yip, it's no problem ... it's fine... thanks.

Capt. I was just thinking about trying to keep the cabin as low as possible.

Eng. We're at about 2800 feet now.

Capt. OK. So there won't be too much of a bump down for him now. (Referring to the sick passenger)

Copilot. Autopilot on.

Capt. Thank you..

Copilot. Auto throttle on.

Capt. OK are you happy to fly the aeroplane?

Copilot. Do you want me to fly it manually?

Capt. No, No. Are you happy to continue flying the aeroplane?

Copilot. Yes.

Capt. OK.

Now you've got to select PMS..

Copilot. PMS - OK I've got it onto PMS.

Capt. That's fine.

Copilot. And auto throttle.

Capt. OK, Looks good. OK just watch that fuel situation. We've got a contingency which is an extra 1580 I think plus we've got an extra 1500 kilos of fuel which probably should uh, Durban's

CAVOK and from my experience of Durban if it's CAVOK very unlikely that it, uh, the only thing that will happen is if they have a serious problem there, you know with somebody pranging on the runway or something like that.

Copilot. Ja.

Eng. Ja.

Capt. OK. And then we'll have to think about Bloemfontein. Then the only thing is, that guy's going to die.

Eng. The only thing is if we nominate Durban as the alternative you know legally, legally we have to have a parallel runway and all that.

Capt. Legally, we are OK we still have Bloemfontein.

Eng. Provided we have enough fuel for Bloemfontein. That's what I was trying to get at.

Capt. Will we have enough fuel for Bloemfontein?

Eng. I don't know, if you give me a SITA I can just work it out. Have you got a SITA there?

Copilot. Yes.

Capt. Take that one.

Eng. OK thanks.

Copilot. We don't have the latest weather on Durban

Capt. CAVOK

Copilot. No like the wind direction and... (pause)

Capt. Are you guys happy. Anybody can think of anything that we should be doing that we're not doing?

Copilot. Um

Capt. Are you happy?

Copilot. Yes, I'm happy.

Capt. One thing you must remember ... our airspeed is dropping off.

Copilot. Our airspeed is dropping off.

Capt. Our auto throttle is in. We've got 88 manual cruise. OK there the thrust is coming back. The only thing is you must remember we've got to plan this descent properly.

Copilot. This uh

Capt. Make sure that we don't have to do an overshoot or a go around or something, and also don't get too low, because you also don't want to stuff around for 5 minutes while we, uh, at low speed.

Capt. OK sir

Capt. 340 at a hundred knots. We've also got a nice wind up from behind. We've got 609 610. (609, 610 refers to speed.)

Copilot. After about uh, OK.

Capt. So we're moving along at a fair lick.

Eng. The landing bug should be at around about to 124 knots

Copilot. 124.

Capt. 241 64 204.

Copilot. 64.

Capt. Durban's CAVOK hopefully runway 23.

Eng. Skipper did you copy the weather somewhere? Not yet?

Capt. Not yet. We'll get it as soon as we talk to Durban.

Eng. OK.

Capt. We're 163 miles.

Copilot. Mmm..

Eng. Thank you for the SITA

Capt. Thanks.

OK what I've done is I've talked to ZUR and asked them to get hold of Durban. So they know about us and I've also told ATC so you have probably heard, so hopefully everything will go without too many hitches.

ATC Springbok 239 could you continue with Durban 1191.

Capt. 1191 Thank you, good day.

Durban Springbok 239 Good afternoon.

Durban ATC Springbok 239 we understand your predicament. Flight level 290. Are you ready to copy the weather?

Capt. Go ahead please.

ATC Surface wind is 180 less than 5 knots visibility better than 20 km CAVOK 1020 nosig.

Capt. Roger 1020 Confirm 23 runway in use.

Eng. And temperature please.

ATC Affirmative runway 23 if you'd like that and temp on the ground as well - 17 degrees.

Capt. Roger copy 17 degrees and considering our predicament we'd would like a straight in visual right hand onto 23 if possible please.

ATC Roger copied.

Capt. And radar assistance would also be appreciated.

ATC As soon as we have you identified.

Capt. Thank you Springbok 239.

OK did you copy that?

Copilot. Yes I did, sir thank you.

Capt. OK whenever you're ready, you can do a briefing for runway 23 on Durban.

Copilot. OK .. runway.. 1023.. Temperature.. OK uh, what, 2.. OK the MSA is.

Capt. OK would you like Durban 1125.

Copilot. 1125 please.

Capt. And just check your distance, hey, and bear that in mind.

Copilot. OK we'll start a descent at 105 nautical miles OK.

Capt. Sorry say that again.

Copilot. Start commence descent at 105 miles.

Capt. 105 miles OK.

Copilot. OK we'll be 6000... (speed warning comes on)

Capt. Thanks. Sorry.

Cabin They have revived the patient, he seems OK now.

Capt. Thanks Mike.

OK carry on.

Copilot. OK we've got to be.

Capt. OK we're climbing now.

Capt. OK the autopilot is in manual.

Copilot. In manual? OK.

Capt. OK.

Copilot. I'll set it back on the height, I'll set it back on the height. There.

Capt. Take it right out and get it down and I think we'll ask him for descent.

Copilot. The autopilot is off.

Capt. OK just maintain level 290.

Durban Springbok 239 we request descent at 105 miles please.

ATC When ready descent level 130.

Capt. When ready 130 Springbok 239.

OK when you're ready level 130. I think you can fly the aeroplane manually.

Copilot. OK I'll fly the aeroplane.

Capt. I'm going to give.

Copilot. Yes.

Capt. OK.

Eng. 130 set up.

Capt. Altitude hold.

Eng. You've still got thrust on, OK (to capt.)

Copilot. OK thanks.

Capt. OK I'll do the briefing for you on the way down. It will make it a little bit easier for you. Obviously the heat is off now - this guy seems to be revived. But I think we mustn't uh, waste any time. We'd like to get on the ground as soon as possible. (pause) OK we need 225.

Copilot. 225.

Capt. Is our minima. Outer market height, 1296 1296 is set here.

Copilot. OK 1296.

Capt. 225 on the double bugs 1296 on the single bug.

Copilot. 1296 1296.

Capt. Make it 1300.

Copilot. 1300.

Capt. Hang on, watch your altitude you're climbing. I think we should think about going down.

Copilot. Commence descent.

Eng. We are at 106 miles.

Capt. OK if you can put one of those bugs at 300 feet there, just one of those double bugs. The other two on just above 200. OK Alright as you start your descent, I'm going to give you a little bit of a rundown on this plate and runway 23. Don't forget your thrust is on and you're starting your descent now.

Copilot. OK.

Capt. OK we've cleared down level 130 altitude select.

Copilot. OK then uh.

Capt. OK. Now you must think about taking that thrust off as well.
OK would you like vertical speed?

Copilot. Vertical speed please.

Capt. OK what have we got here. We've got about 2 000, 2 700 foot per minute should be OK. OK our inbound if you'd just like to think about this, our in bound is 236. So we're approaching from this angle, 236 is in bound that way. Our heading at the moment is 170. The uh, what's it, about 50 degrees to the right. OK we join minimum. Minima is 2 000 feet. We hope for radar vectors. At the moment we're clear down, level 130.

Copilot. OK.

Capt. ILS frequency 1103 outer marker 210 210, Set your side, 235 for the middle market. Outer market height 1296. Down to a minimum of 225. Our missed approach is to climb on runway heading to 3000 feet then turn left and return to the NDB. Left over the sea.

Copilot. Over the sea.

Capt. OK would you like to review your go around procedure?

Copilot. Yes, go around procedure take maximum thrust, I'll ask for maximum then positive climb, gear up then flaps 20.

Capt. Roger OK. OK are you happy?

Copilot. Yes I'm happy sir.

Capt. I'm off the air for a second. Durban traffic Springbok 239.

ATC 239 go ahead.

Capt. Roger are you aware of the situation we have on board with a passenger with a heart attack.

ATC That is affirm, and an ambulance is waiting for you to transport the passenger directly to Addington Hospital.

Capt. Right, thank you we have been advised by our cabin crew that a nurse has said that the passenger's condition has improved, however, we still would like to regard his condition as critical.

ATC Thank you very much, will continue to do our best.

Capt. Springbok 239, we'll talk to you a little bit later.

ATC Thank you.

Eng. Skipper.

Capt. Yip.

Eng. I'm just taking Uh 1316 I think it's their frequency engineering in Durban OK.

Capt. OK 230 at 80 miles maybe a little bit low. Just bear that in mind.

Eng. OK skipper 1316 Happy?

Capt. Ja thank you.

OK our speeds 124.

Copilot. 124 checks.

Capt. 164.

Copilot. 204.

Capt. 204 go around thrust 1,50.

Copilot. OK 1,50.

Capt. MDA 225 height above terrain 200 feet RVR 800 metres we are CAVOK. The wind is from the left 180 at 5 knots.

Copilot. OK.

Capt. Visibility is good, there should be no problem at all.

Copilot. OK speed 300 please.

Capt. OK you want 300 knots OK 300 knots selected.

OK the wind is back to zero and we've got 400 ground speed 70 miles

Copilot. OK.

Capt. 20 000 feet.

Copilot. OK.

Capt. Ah, we're looking OK.

Copilot. Do we have speed restrictions?

Capt. Say again.

Copilot. Do we have speed restrictions?

Capt. No, none at all.

ATC Springbok 239 at 50 MDE cleared 5000 feet ONH 1020.

Capt. Roger at 50 DME clear at 5 000 feet Springbok 239.
At 50 miles in other words at 11 miles clear to 5 000 feet.

Capt. OK can we do the descent approach.

Copilot. Yes.

Capt. Descent approach checklist please. Would you like autobrakes?

Copilot. No

Capt. No autobrake, autobrake off - on. Bugs and EPR set set off.
OK we've got 4 miles to go and then we're clear down to 5000 feet. Altitude is selected green.

Copilot. OK it's...

Capt. and to maintain 130 to to 50 miles

Copilot. mumbles (while Cpt talks) affirm

Capt. OK now don't forget that you're on the INS maybe you want to turn off a little bit to the left to intercept the ILS. He hasn't given us any vectors yet.

Copilot. OK... 50 miles

Capt. OK we're standing by for 50 miles.

Copilot. 50 miles down to

Capt. OK 5000 feet
Durban Springbok 239 leaving 130 down to 5 000 feet request radar vectors if possible.

ATC Roger we have your radar identified. Could you make your heading 150 please.

Capt. Turning left turning 150 Springbok 239 (To ATC).
Heading 150

Copilot. Roger

Capt. OK radar vectors I'm going to give you the ILS inbound, 236 selected twice.

Copilot. 236.

Capt. The ILS frequency 110 I'll give you just now. We've got the outer marker Delta November on both NDB's. Identified with Romeo Uniform on standby OK would you like heading.

Copilot. Heading please.

Capt. Heading selected. Altitude down to 5 000 feet. Heading should be 150.

Capt. 150.

Capt. OK what speed would you like?

Copilot. OK I'd like 250 please.

Capt. 250 OK 250 knots.

Copilot. Checks thank you. That's through 10 000.

Capt. OK 100 and the lights are on. OK we've got no pitch mode selected at the moment. Either vertical speed or indicated air speed whichever you like.

Copilot. OK give me indicated air speed please.

Capt. OK you want indicated air speed. It gives us 260 knots odd.

Copilot. How much fuel do we have?

Capt. Transition 1020.

Copilot. ...020
 Capt. He says that we are OK for diversion to Bloemfontein or to Johannesburg. OK 5900 feet - now.
 Copilot. Checks
 Capt. Set and cross checked.
 ATC Springbok.....
 Capt. 3500 feet set
 Copilot. That's affirm give me vertical speed please.
 Capt. OK vertical speed.
 Copilot. 500 feet a minute.
 Capt. Descent 500 feet a minute OK do you want to decrease your airspeed as well?
 Copilot. Affirm.
 Capt. Thank you clear down to 3 500 feet and you are 29 miles.
 Copilot. Flaps one please.
 Capt. OK I think we're a little bit far out for that. If you don't mind if we just go down a little bit lower. Because we've got quite a lot, but long way to go otherwise we're just going to stooge around here with flap and really low speed. Just keep on your heading and when we get onto 15 miles we can start putting on flaps.
 Copilot. OK.
 Capt. OK you're coming up to 700 feet to level off.
 Copilot. OK.
 Capt. 250 knots is OK too because you've got, you know you can take flaps at this speed. If you're doing 360 knots you could think about slowing down. He's also taking us on a nice wide right hand base. (pause) Altitude select green.
 Copilot. Thank you. Give me indicated air speed please.
 Capt. OK we're going to maintain. We should be altitude select green. We're can only maintain one pitch mode Wait until you're on 73's then you can select 2 pitch modes.
 Copilot. Yes of course.
 ATC Springbok.
 Capt. ...field in sight. Springbok 239. We're clear to 1 500 foot altitude select.

 Capt. I see that.
 Copilot. Give me indicated air speed.
 Capt. Indicated air speed.
 ATC Turn right 180.
 Capt. Right 180 Springbok 239.
 180 he wants us on.
 Copilot. Affirm thank you.

 Capt. We're 19 miles 3500 feet. Would you like the ILS.
 Copilot. Affirm.
 Capt. ILS is selected and identified.

Copilot. Thank you.
 Checklist.

Capt. 1000 foot to level off and we're 17 miles.

Copilot. Checks.

Capt. OK I think you should take the thrust off now, and get down to 500 feet and then we can start running the flaps. We don't want to get too high.

Copilot. Yes, OK.

Capt. Can I tell them we have the field in sight and we can do the turn on ourselves?

Copilot. I don't have the field in sight - do you?

Capt. Well, it's over there. Are you happy? I'm happy.

Copilot. OK if you're happy.

Capt. 239 Field in sight. (to ATC).

ATC Call tower on finals 1187.

Capt. 1187 and final. Would you like the ILS?

Copilot. ILS Please.

Capt. ILS selected. Nav and glide slope armed.

Copilot. OK.

Capt. OK I think we can start thinking about getting flaps out.

Copilot. Flaps one please.

Capt. Flaps one selected. And I'll give you, what is it, 204

Capt. On one green.

Copilot. Flaps 5 please.

Capt. Flaps 5 selected 184. This should be a nice intercept for the ILS. It gives us about 45 - 50 degree intercept. NDB is coming around nicely. Localiser should be coming alive any second. See the needle coming around should be 225 got about 10 degree to go.

Copilot. OK.

Capt. We've got 5.5 green. Ten miles.

Copilot. And -

Capt. Nav green.

Copilot. Nav green.

Capt. I'm going to give you runway heading.

Copilot. Runway heading.

Capt. Louis Tower Springbok 239 is turning final runway 23.

ATC Springbok 239 the wind is calm you are cleared to land.

Capt. Surface wind calm Springbok 239 we are cleared to land. We are cleared to land.

Copilot. OK Captain Flaps 10 please.

Capt. Ten selected.

Copilot. 164 knots.

Capt. It's 164 knots. Glide slope is appearing.

Copilot. I see that, thank you. Ten - Ten green

Capt. Ten - Ten green.
 Copilot. OK and gear down please.
 Capt. Gear selected down.
 Capt. Glide slope is alive 2 dots.
 Copilot. And flaps 20 please.
 Capt. 20 selected 144.
 Copilot. 144.
 Capt. Down in green.
 Copilot. Thank you.
 Capt. 1 dot - glide slope green - go around armed.
 Copilot. OK flaps 30 - 25 - please.
 Capt. 25 Selected - and what speed would you like.
 Copilot. One - it stays the same doesn't it.
 Capt. Plus 5 perhaps.
 Copilot. OK.
 Capt. 129 Kts.
 Copilot. 129 Kts. and Uh...
 Capt. And missed approach altitude is set
 Copilot. 3 000 ft.
 Capt. Say again.
 Copilot. Say again please.
 Copilot. Flap 30.
 Capt. Flap 30 is selected and running - 30 - 30 green and landing checklist please.
 Checklist....
 Capt. And past the outer marker altitude was checked altimeter and instruments are cross checked.
 Middle marker selected.
 SA 239 passed the outer marker. -to ATC.
 ATC Springbok 239 is cleared to land the wind is calm.
 Capt. Springbok 239 is cleared to land thank you.
 Capt. 500 ft in the slot.
 Copilot. Thank you.
 Capt. And you may land straight ahead.
 Copilot. Landing - thank you.

Capt. After start check list complete. OK and taxi clearance please.

Copilot. Uh, What is our flight number?

Capt. 239.

Copilot. Uh, SA239.

Capt. Springbok 239 requesting taxi. (To ATC).

ATC Springbok 239 Taxi holding runway 03.

Copilot. OK we're taxi holding runway 03 Springbok 239.

Capt. OK require 10 flaps and we have 10 flaps.

Copilot. We have 10 flaps selected.

Capt. Would you do the control check whenever you're ready please?

Copilot. OK uh, control check coming up. OK left aileron up, spoiler down, central right aileron up left spoiler down. Elevator full deflection forward, central full deflection back and central. Are you ready for the rudder?

Capt. OK whenever you're ready.

Copilot. OK left rudder full deflection centralized right rudder full deflection, centralized. Control check completed.

Capt. OK thank you will you review the card please - whenever you're ready.

Copilot. Uh, the card says we've got an EPR of 163 set uh, we've got 162 there. Reset it.

Capt. We'll use reduced.

Copilot. OK reduced is 147 isn't it. 147 set four times and our V1 is 121 Correction 129. and V rotate is at 129 as well. V2 146. Target rotation will be 15 degrees set.

Capt. (Over co-pilot) Set here.

Copilot. OK flaps required will 10 flaps set.

STAB trim is 10½ units there.

Capt. OK we'll need to set that. (pause)

Copilot. STAB trim is set.

Capt. OK.

Copilot. That's it.

Capt. Thanks. OK after 100 knots this will be a goal orientated take-off. In the event of a decision to stop before V1, 129, I'll simultaneously apply full brakes and close the thrust lever. Raise the speed brake manually and full reverse thrust symmetrically on each engine, will you please assist?

Any malfunctions after this time we will continue straight ahead to 5 miles. Contact ATC soonest, 15 degree right hand turn November Lima, which is set twice and on the right hand side.

Copilot. Right.

Capt. Climb to 6 430 feet which is set here and further climb once clear to 7 000 feet. Our

departure clearance is a Rhino one Alpha departure, which is straight ahead. Runway heading to 5.5.DME A right hand turn climbing to flight level 90. ATC will clear us to flight level 130, at 130 we are clear on route.

Copilot. That checks.

Capt. And can we have the before takeoff checklist to the line please?

Eng. OK.

Copilot. Oh, yes I'm happy with the departure clearance. Go ahead please.

Checklist

Copilot. Ignition lights all out - check. Takeoff bugs and EPR set. Takeoff briefing completed.

Capt. Yes thank you.

ATC Springbok 239 you are clear for takeoff. The surface wind is calm, your airborne frequency 124,5

Copilot. Clear to takeoff Airborne 124,5 Springbok 239.

Capt. OK all the lights please and advise the cabin crew we are clear take-off.

Copilot. OK could you say that again please?

Capt. OK all the lights please and could you advise the cabin crew please.

Copilot. Cabin crew, prepare for take off. OK cabin crew are alerted.

Capt. OK can we have the before takeoff checklist to the body gear steering please.

Copilot. OK before takeoff checklist to the body gear steering please.

Eng. OK before takeoff checklist below the line, says cabin crew.

Copilot. Alerted.

Eng. Uh, landing and strobe lights?

Copilot. Uh, strobe lights we'll put them on now.

Eng. Ja.

Copilot. Put them on OK.

Capt. We don't need the storm lights.

Copilot. Ja.

Eng. Ja, and the runway turnoff too, these two here.

Copilot. Runway turnoff lights? Right, ja.

Eng. OK, cabin crew is alerted, landing strobe lights? on?

Copilot. On.

Eng. INS transponder.

Copilot. INS transponder is set onto standby. OK set on.

Eng. Thank you, pack valves off, ignition flight start, body gear steering.

Capt. Standby.

Eng. To go and take off clearance to go.

Capt. OK we've got takeoff clearance, we're standing by for take-off clearance.

Copilot. We do have takeoff clearance.

Capt. And disarm the body gear please.

Copilot. Body gear disarmed.

Eng.	Sorry body gear steering.
Copilot.	OK disarmed.
Eng.	And takeoff clearance?
Copilot.	Takeoff clearance obtained.
Eng.	Before takeoff checklist completed.
Capt.	OK standby for takeoff.
Eng.	Standing by.
Capt.	Set reduce thrust please.
Eng.	Setting. Thrust set.
Copilot.	80 knots.
Capt.	Checked.
Copilot.	V1 Rotate through 15 degrees.
Capt.	Thank you.
Copilot.	Positive climb.
Capt.	Gear up please.
Copilot.	Gear up.
Capt.	Indicated airspeed and drift angle.
Copilot.	Indicated airspeed selected. OK we have no drift.
Capt.	Thank you.
Copilot.	O3I selected.
Capt.	Climb thrust please.
ATC	Springbok 239, you can continue with 1245 and climb level 130.
Copilot.	1245 and climbing flight level 130 Springbok 229.
Eng.	Setting climb thrust and it is now set.
Capt.	Thank you.
Copilot.	130 Selected.
Capt.	Thank you.
Eng.	Checks.
Copilot.	Johannesburg approach Springbok 229 on 1245.
ATC	Springbok 239, Good day we have your radar identified.
Copilot.	Ah, radar identified Springbok 239.
Capt.	Vertical speed please 1 500 feet a minute. Right hand turn, 089 please.
Copilot.	OK 089 right hand turn.
Capt.	And we've got PMS there thank you. Vertical speed please 1500 feet a minute. and flap to 5 please.. 220 - 204 knots please.
Copilot.	OK flaps five selected and 204 knots.
Capt.	Flaps one please 224.
Copilot.	Flaps one selected.
Capt.	224 knots please.
Copilot.	224 knots.

ATC Springbok 239 Climb level 290 and contact area 1267.

Copilot. Right 290 1267 Springbok 239.

Capt. 290 please.

Copilot. 290 coming up.

Capt. And flaps up please. 290 knots on the airspeed. and turn me right onto...

Copilot. Flaps up.

Capt. Onto 165 please.

Copilot. Turning right 165....selected 290 on the ...

Eng. That checks, thank you.

Capt. Vertical speed please 1500 foot a minute.

Copilot. Ah, vertical speed, 1 500 feet per minute.

Copilot. Johannesburg area control Springbok 239 going through level 142.

ATC Roger, got your radar identified, call maintaining flight level 290.

Copilot. Identified, call maintaining level 290.

Capt. Indicated air speed please.

Copilot. OK indicated air speed selected.

Capt. Thanks can I have PMS please. Altitude select...

Eng. Standby.

Capt. You've got throttle in.

Eng. Just standby, just kill that PMS light first, maybe let's try and reset it.

Capt. Oh, OK I didn't see that. That's it.. Not a problem, I'll just fly manually.

Copilot. OK it is resetted now. It's cleared. selecting PMS for you.

Capt. Thank you.

Copilot. PMS - it is off-OK.

Eng. INS and the autothrottle out.

Copilot. INS selected.

Capt. Um where we going?

Capt. OK give me a heading back please, give me indicated airspeed and take the PMS off and altitude select 290 please.

Copilot. OK indicated airspeed 290 selected.

Capt. OK I'm taking away autopilot. OK Indicated airspeed altitude select November Lima set both sides. Rather sorry, Victor Delta.

Eng. Are you going to fly with the PMS. OK right that's alright.

Capt. No, it's alright, we'll fly indicated airspeed.

Eng. OK fine.

Cabin (passenger with heart attack)

Capt. OK is he bad. OK thanks very much. OK will go contact ATC please and find out what the weather is in Durban and the weather Waterkloof. See if there's any improvement there, because we can possibly go back.

Copilot. Area Springbok 239.

ATC 239 go ahead.

Copilot. We're requesting the weather conditions at Smuts now and at Waterkloof.

ATC Roger, Jan Smuts is RVR of 200 meters temperature 5.5, QNH 1020. Nosig. (*no significant change*) low visibility procedures in operation. Standby for Waterkloof weather.

Copilot. Standby.

Capt. Doesn't look so good there hey. What did he say the RVR was?

Copilot. Uh, he says RVR of 200 and we are having low visibility conditions now.

Capt. Ja, well 200 meters is CAT 3. so we don't have CAT 3 at Jo'burg so let's see what Waterkloof says.

ATC Springbok 239 Waterkloof weather.

Copilot. Springbok 239 go ahead.

ATC Waterkloof is very much the same, 300 meters due point unknown, temp still 5 degrees.

Copilot. Waterkloof, we've got 300 meters uh, very much the same.

Capt. Ja, the same.

Copilot. Ja.

Capt. Yes, I think we should continue to Durban. Durban when we left was CAVOK. Won't you just ask them to confirm that Durban is CAVOK. And Bloem as well, just so we know what the story is.

Copilot. Springbok 239.

Eng. Just kill the lights - Standard QNH.

ATC Springbok 239.

Copilot. Johannesburg 239.

ATC 239 go ahead.

Copilot. Please confirm that the weather in Durban is CAVOK and in Bloemfontein as well.

ATC Standby we'll get back to you.

Capt. 1013 your side.

Eng. And the lights, and cabin signs.

Capt. You can put those on thanks.

Eng. OK after takeoff checklist completed. I think we must get. If the weather's OK we should continue to Durban. What do you think?

Copilot. Ya, I think so as well, because.... ja. Doesn't make any sense to go back.

Eng. Ja.

Capt. Can't go back to Smuts. OK let's wait and see if the Durban weather if OK, otherwise we must go to Bloem. Durban weather's OK would you give them a short ZUR. And then just tell them, and ask them to please advise Durban that we've got a problem on board, and that we're going to need assistance on the ground. Get a doctor and an ambulance to meet the aircraft. And I think also if you can tell ATC. uh, once we decide where we're going to go.

Copilot. OK, one to go.

Capt. Thanks. And they can tell Durban what's happening so they have the minimum of delays. I think we should get there as quickly as possible if this guy's gonna die on us.

Copilot. Alright. Ja we're still standing by the weather in Durban.

Capt. Ja well let's wait and see what happens. But in the meantime let's just continue to Durban.

Copilot. OK.

Capt. OK I'm going to speed up a little bit. Can we get an .88 cruise please.

ATC Springbok 239 Johannesburg.

Copilot. 239, go ahead please.

ATC Durban is CAVOK, 1020, surface wind is calm runway 23 in use and Bloemfontein is CAVOK as well.

Copilot. Thank you, copy.

Capt. OK so let's. Are you happy to continue to Durban?

Copilot. Oh yes, the weather is CAVOK and ... runway 23 and the wind is calm.

Capt. OK. Are you happy?

Eng. Yes thank you skipper yip.

Capt. OK the best that we can do is go as fast as possible and do an .88 cruise. Stay at 290 so we don't get the cabin up to high.

Eng. OK.

Capt. To affect this guy in the back. If you could contact ZUR please and ask ATC also if they can talk to the guys in Durban and ask them no delay.

Copilot. OK.

Capt. Tell them what the predicament is. Just tell ATC that we've got a sick passenger and we're going to continue to Durban. If they could just get things sorted out for us.

Copilot. Jo'burg Springbok 239.

ATC Springbok 239 go ahead.

Copilot. We do have a sick passenger on board and would you please inform Durban control that we should not have any delays. This passenger is in a very critical position.

ATC Roger, would you like direct routing to Durban at flight level 290 which is available.

Copilot. Yes, we'll take direct routing to Durban and we will stay at level 290. Springbok 239.

ATC Roger, keep level 290 direct Delta November Victor. And we will advise Durban.

Copilot. Routing direct Delta November Victor. Thank you bye-bye sir.

Capt. OK INS direct to Durban.

Copilot. OK.

Capt. Thanks.

Copilot. OK ZUR is on no 3. Springbok 239.

ATC Springbok 239 go ahead.

Copilot. Springbok 239 We do have a sick passenger on board who's having a heart attack. We're continuing to Durban because of the weather and we request that you ...our people in Durban to organize medical people to be on standby by the time that we get there.

ATC OK we'll do that then, Springbok 239 we'll sort it out.

Copilot. Thank you. OK I have advised ZUR.

Capt. OK thanks very much.

Eng. OK can I have that after takeoff card please.

Capt. Can anybody think of anything?

Eng. Thank you very much.

Capt. That we haven't.....Um, are you happy with what we're doing?

Copilot. Oh, yes, I'm happy, I'm happy with that.

Capt. Alright lets.....

Eng. Skipper, according to the SITA should have enough fuel for the alternate to Bloemfontein or Jo'burg.

Capt. As soon as we talk, or hand it over to Durban rather, can you get the weather from them please.

Copilot. OK.

Capt. And then tell them, make sure that they know what's happening.

Copilot. Right.

Capt. And ask them for radar vectors. With a minimum delay I think. If it's CAVOK I think we should try for runway for 23.

Copilot. Alright.

Capt. If you wouldn't mind.

Copilot. 5, 5, Uh... it's nine one.

Eng. Thanks for the landing card.

Copilot. Thank you.

Capt. OK he's cheated, he knows what the weather is already.

Copilot. OK we have VREF is 124.

Capt. OK 124.

Copilot. 124.

Capt. 164.

Copilot. 164.

Capt. 204.

Copilot. 2-0-4.

Capt. OK we're going to set up for runway 23.

Copilot. Runway 23 - Thanks.

Capt. Minima is 225, outer marker height is 129, 1296, 225, Set here. OK It's 236 inbound. The frequency is 1103 which is the same as 03 left. Initial approach altitude 2000 feet outer marker at 1296 feet. Our minimum is 225 feet and our missed approach, our missed approach procedure is climb on runway heading to 3000 feet.

At 3000 we turn left and return to Delta November NDB. If we have to go round I'll call go around thrust, go around altitude, flaps 20, positive climb, gear selected up.

Copilot. OK right.

Capt. OK.

Copilot. Uh, that checks.

Capt. Thanks.

Copilot. OK I've captured the DME my side and select Durban, says we routing direct.

Capt. Put Durban your side 1125.

Copilot. OK.

ATC Springbok 239 Johannesburg area.

Copilot. 239 go ahead please.

ATC Springbok 239 Durban advises us that you can expect a visual approach, runway 23 the surface wind is calm and they are making you number one for landing.

Copilot. OK we're expecting 23 surface wind calm, and thank you.

Capt. OK I'm going to put. We've got, uh... Grayton, just for interest sake and the outer marker Delta November on standby.

Copilot. Alright.

Capt. I'm going to go to 1125 my side - OK we're 159 miles.

Copilot. Right, OK.

Capt. OK I think we can start our descent at 90 miles.

Copilot. Right.

Eng. Where Skipper? Where do you want to start the descent

Capt. 90 miles.

Eng. OK.

Capt. Should we be 'windgat' and say 55? Springbok 239, could you continue with Durban on 119.9.

Copilot. 119 uh, 9 Springbok 239 Thanks bye now.

ATC Springbok 239 Good morning are you maintaining flight level 290?

Copilot. We are maintaining 290, and just to confirm that you are aware of our request for a direct routing since we have a sick passenger on board.

ATC That is affirm direct Delta November Victor for the time being when you have the field in sight, uh you can have a visual approach runway 23. And when ready descent level 130.

Copilot. We're expecting visual approach runway 23. Call field visual and cleared when ready down to 130.

ATC Springbok 239.

Capt. OK, if you wouldn't mind calling Durban traffic on 1316 and just advise them, make sure.

Copilot. 1316.

Capt. That they know that um our passenger, that we got our sick passenger on board, and that hopefully they got the message and that they've got an ambulance and a doctor waiting for us.

Copilot. Right.

Capt. Thanks.

Copilot. Durban traffic Springbok 239.

ATC Springbok 239 Go ahead.

Copilot. We just want to confirm that you are aware of our sick passenger on board and that you have organized some medical assistance on standby for us when you land.

ATC Roger, we have an ambulance over here. We are aware of the predicament and uh, a doctor will be waiting with the ambulance.

Copilot. Thank you very much.

Capt. OK just bear in mind that your DME is on a hold at Jo'burg.

Copilot. OK right, how to deselect this.

Copilot. All you do is just put it on operate and just reselect 1125. There you go.

Copilot. Great.

Eng. You know what we could have done is ask if there wasn't another nurse on board just to confirm that it is a heart attack. Maybe this guys just got a bit of sooibrand, heartburn.

Capt. Mm, OK wouldn't you just.

Eng. That's...

Capt. Just give them a shout and ask the chief how this guy looks in the back. Thanks very much.

Copilot. OK.

Capt. Just give them a shout on 1-1, they should be able to ask them to come up and we can have a chat to them. make sure this guys - what his condition is.

Copilot. OK can I just get to the phone there.

Capt. Just phone him on 1-1.

Eng. Here's the steward.

Copilot. OK we just wanted to confirm that perhaps there would be a nurse in the back, maybe to see to the sick passenger.

Cabin Well, it really is a heart attack....

Copilot. OK we're setting direct and there'll be an ambulance.

Capt. Thanks.

ATC Springbok 239.

Copilot. Springbok 239, thanks.

Eng. Well, there goes our bonus hey! Any snags your side Skipper, that we need to report?

Capt. Um...

Eng. Anything your side?

Copilot. No there's nothing on my side.

Eng. OK there's only that no. 2 engine EGT indicator. They probably need to fix up set that max indicator needle, Skipper, can I select engineering on Number 3, 3 - I'll speak to them sort of half-way through the descent. Thanks.

Capt. Sure.

Eng. I think we must also remember they've asked for a wheelchair a little earlier on. now, now, when we speak to them later on, ask them for a wheelchair.

Copilot. Later on OK.

Eng. Ja.

Copilot. I'll do it now. Traffic Springbok 239.

ATC Springbok 239 go ahead.

Copilot. We also need a wheelchair for our flight as well.

ATC OK we copied that and we'll see you on the ground.

Copilot. OK thanks.

Capt. Wouldn't you mind having a chat to the steward again and asking him please to make sure that they make an announcement to the passengers that they all sit down and wait until they clear this guy off. And then everybody can just, so everybody knows they've got a sick passenger on board, and then they can disembark after that, if you wouldn't mind.

Copilot. OK, Oh, yes please could you just make sure that everybody stays on board until the sick passenger is taken off first.

Stewart OK.

Copilot. Just make an announcement to the passengers to sit down first. Thank you.

Stewart Thank you.

Capt. OK I'm going to go a little beyond 90 miles because I'm going to 'klap' it on the descent. Otherwise we going to be too low.

Eng. OK.

Capt. I'll probably end up by being too high and have to go around.

ATC Springbok 239 could you advise me when you are going to commence your descent, what distance.

Copilot. When do you want to commence descent?

Capt. Take it at 80 miles.

Copilot. We are now at 86 miles, we'll start our descent at 80 miles, Springbok 239.

ATC Roger copied.

Capt. OK 80 miles go down.

Copilot. OK, OK Springbok 239 commencing descent level 130.

ATC Roger Springbok 239.

Capt. OK is there anything we haven't done? Are you happy?

Copilot. Ja happy set up approach checks.

Capt. Right we can do that when we get to about 140 or so.

Copilot. OK.

Capt. Won't you ask him for radar vectors please?

Copilot. Durban Springbok 239.

ATC Springbok 239 go ahead.

Copilot. Requesting radar vectors.

ATC Roger 50 miles turn left heading 150 radar vectors.

Copilot. At 50 miles we'll turn left heading 150 radar vectors. Springbok 239. OK we'll turn left at 150 at 50 miles.

Eng. OK skipper we've got enough fuel for our diversion.

Capt. Thanks.

Eng. And, um, I just want to speak to engineering on No. 3 OK

Capt. OK.

Eng. I'm off the air.

(Durban engineering)

Capt. OK now, it's going as I hoped it would. Let's see if we can help it on.

Eng. Thank you I'm finished and engineering will standby with GPU.

Copilot. Uh, thank you.

Capt. Please just confirm that transition level there, is it?

Copilot. OK I'll confirm just now. OK 50 miles.

Capt. OK left 150 please will you set me up for runway 23 please. With the ILS.

Copilot. 236 OK uh, just a minute.

Capt. OK no problem.

Copilot. Ah, 236, OK 236 set there.

Capt. Thank you.

Copilot. Transition altitude is 5500

Eng. OK and the level, what's that ah.

Copilot. Transition level. OK, ATC will give us.

Eng. OK I just wanted to confirm. Sure thanks.

Copilot. Sure, one to go alt SEL green.

ATC And Springbok 239. Further descent down to 5000 feet QNH 1020.

Copilot. Descent 5000 feet 1020 Springbok 239.

Capt. OK I've selected 5000 feet altitude.

Copilot. OK. OK descent approach checklist checks.

Capt. Thank you.

Copilot. OK. 180 do you want any auto brakes?

Capt. No thank you.

Copilot. OK I've got thatOK descent approach checklist.

Capt. OK descent approach checklist says auto brakes.

Copilot. Off.

Eng. Landing lights.

Copilot. Uh, landing lights, we'll just switch them on below 10 000 feet.

Copilot. You can switch them no now.

Eng. All of them or just inboard

Copilot. Inboards?

Capt. Yes, just the inboards. OK ja, OK that's the....

Eng. Landing lights, OK landing data?

Copilot. Landing data bugs and EPR set. Our V Ref is still OK 124.

Eng. 124 ja checks. OK radio altimeters.

Copilot. Radio altimeters are set.

Eng. Selcal.

Copilot. Uh Selcal uh, off.

Eng. Thank you, fuel set for landing. The heats off. Pressurization is set. Annunciator lights and circuit breakers.

Copilot. OK check.

Eng. Checked the back and descent approach checklist to the line.

Copilot. Thank you. (pause)

Capt. Indicated airspeed please.

Copilot. Indicated air speed selected. (pause)

Capt. Would you like to fly the aeroplane?

Copilot. Oh, well I can fly it if you want me to.

Capt. Want to fly it, OK whenever you're ready. Just have a look around. Heading 150 for intercepting the ILS. Are you happy?

Copilot. Alright I'm happy.

Capt. Alright you've got control.

ATC Springbok 239 descent 2500 feet.

Capt. I'll take the radio. Clear down 2500 feet Springbok 239. Clear down to 2500 feet.

Copilot. OK.

Capt. We have got 236 selected twice. The INS is I'm going to select your side.

Copilot. Alright, thanks and uh, 1020 we're through

Capt. 1020 thank you. And the INS going my side. Springbok 239 has the field in sight.

ATC Roger Springbok 239. If you could call tower 1187 passing 3000 feet for visual approach runway 23.

Capt. Through 3000 feet 1187 Springbok 239. OK we're going quite fast at the moment 22 miles. we're doing OK. I think you continue down to 2500 you should be OK. Once you get there probably start decelerating a little bit.

Copilot. Right.

Eng. Skipper we're standing by for the rest of the list.

Capt. OK.

Eng. Descent approach checklist below the line says altimeters.

Capt. Set and cross checked.

Eng. Un... checklist.

Capt. 500 foot so level off.

Copilot. Checks.

Eng. ILS coming alive both sides.

Capt. Thanks. Durban tower Springbok 239, good afternoon. Out of 3000 foot and we're 20 miles heading 150.

ATC Roger - final approach runway 23.

Capt. Final 23, Springbok 239. OK I'm turning right onto 180.

Copilot. OK turning 180.

Eng. And the cabin is on the ground skipper, for the 'Oakie'.

Capt. OK thank you. We're clear down to 1500 hundred foot which is down to circuit. I'm going to give you a speed of about 250 knots now. OK I'm going to give you ILS

Copilot. OK you can select ILS.

Capt. NAV and glide slope armed.
 Copilot. Thanks.
 Capt. Sorry, would you like?
 Copilot. No that's alright.
 Capt. OK. And you've got 700 feet to level off 18 miles and you're looking good. ILS is identified.
 Copilot. Thank you.
 Capt. We're about 8 degrees off the localizer so it should be coming in quite soon. And that's circuit. Altitude select green and maintain 1500 feet.
 Copilot. That checks.
 Capt. I think you can start running your speed down so we can get the flaps out.
 Copilot. Alright, yes.
 Copilot. OK could we select flaps, flap one please.
 Capt. One selected and running 204.
 Copilot. OK 204 thank you.
 Capt. I gave you duff gen then, we've got about 8 degrees to go now for the localizer to come in.
 Copilot. Right.
 Capt. We've got 1-1 with the green. Nav green. Runway heading.
 Copilot. Give me flap five please.
 Capt. Flaps.
 Copilot. 184.
 Capt. 184. Watch your speed, your flaps not there yet.
 Copilot. Yes, flap 5.
 Capt. OK flap 5 is running and your speed should be a minimum of 184 knots. OK that looks OK nearly 5 flap now. 5-5 green.
 Copilot. Thank you. OK flap 10 speed 164.
 Capt. 164 selected - we've got 10 - 10 green. We are clear to land.
 Copilot. OK flap 20.
 Capt. OK 20 flaps selected and running. 144 knots. 20 - 20 green. (pause) Glide slope is alive.
 Copilot. Checked.
 Capt. Thanks.
 Copilot. Give me gear down please.
 Capt. Gear selected down. 1½ dots.
 Copilot. Thank you.
 Capt. Down and green.
 Copilot. OK.
 Capt. 1 dot.
 Copilot. OK. Right flaps 25.
 Capt. 25.
 Copilot. Speed 129 knots.
 Capt. 129 knots.

Copilot. Thank you.

Capt. 25 - 25 green. Can I do the landing checklist to the flaps.

Copilot. Yes landing checklist to the flaps please.
(Checklist)

Capt. Glide slope is green, go around armed missed approach altitude set.

Copilot. Thank you. OK landing flap please.

Capt. Outer marker altitude checked. Altitude instruments cross-checked. Flaps 30 - 30 green.

Eng. 30 - 30 green my side. Hydraulics normal, landing checklist completed.

Capt. And we are clear to land.

Eng. What is that surface wind again.

Capt. Calm. 500 feet in the slot.

Copilot. Thank you.

Eng. 100 feet to minima.

Capt. And land straight ahead.

Eng. 100 feet 50, 30, 20, 100 knots 90 knots, 80 knots, 70 knots, 60 knots.

Capt. And I'm giving you body gear.

Copilot. Body gear thanks.

Eng. You have set up your speeds yet?

Capt. Negative.

Copilot. Negative, Negative. Captain right are you ready for the speeds?

Capt. Affirmative 1100 fuel weight.

Copilot. 1100 fuel weight affirm.

Capt. OK that's fine.

Capt. OK thanks it's Durban 05 intersection Bravo 16 slats 8 flaps, giving us a VFT0 of 219. V4 189.

Capt. 89.

Copilot. V3 151.

Capt. V3 151.

Copilot. and V2 139.

Capt. V2 is 139.

Copilot. And a V1 and rotate of 133.

Capt. 133.

Copilot. 30.7 in the window 43 in the box parameters 4 and 4 they being obstacle.

Capt. Obstacle OK.

Copilot. OK, OK and are you ready to copy engine failure procedures? (to engineer)

Eng. Yes, I'm ready.

Copilot. OK engine failure procedure is maintain runway heading, level off at 1100 feet AMSL.

Capt. Set both sides.

Copilot. Before accelerating climb to MSA contact ATC as soon as possible.

Capt. OK and MSA out that way, let's say seawards is 2000 and then 4600 down to the South East OK.

Copilot. OK ja, let's put it on this.

Capt. And as long as we can keep in sight 5 miles. We can maintain circuit altitude. Come back here for a visual approach auto 05.25 flap landing.

Copilot. OK and got the flex of 104.7 with a max of 110.1

Capt. OK.

Eng. I've written it on the card.

Copilot. OK, thank you.

Capt. If we have an engine failure after the turn.

Copilot. Sorry Captain.

Capt. Off 0.5.

Copilot. Yes.

Capt. OK.

Copilot. Bring in the charts.

Copilot. OK uh, I think a turn seawards immediately would be a good idea if there's any weather or terrain clearance problem.

Copilot. OK.

Capt. You're getting the radar terrain chart.

Copilot. Yip, I don't think that's a bad idea. I see you've got the Jo'burg plates out here already.

Copilot. I've got Jo'burg plates out there Captain. I've got the 05 plates just to take out.

Capt. That's fine. OK could you read the card please.

Eng. Alright the uh card Durban 05 intersection brave 8 flap 16 slats for a weight of 128 tons VFTO 219.

Copilot. 219.

Eng. V4-189.

Capt & Copilot 189.

Eng. V3-151.

Copilot. 51.

Eng. V2-139.

Copilot. 39.

Eng. V rotate and V1 both at 133.

Copilot. 33.

Eng. That's 43 in the box for safe pitch of 13,7.

Capt. Set.

Copilot. Thank you.

Capt. Thank you and the trim sheet has been we happy with that?

Copilot. Ja roger.

Eng. Single, engine gross is 190.

Capt. Ja.

Eng. Not a problem for immediate 25 flap if required.

Capt. Thank you. Alright are we ready? Doors are closed and the trim sheet has been. Hello ground.

Copilot. May I request start?

Capt. Ja if you could use that - thanks.

Ground Goodday Captain, go ahead.

Capt. OK I see you have the COPCO connected - can you give us some air?

Ground You have full air there Captain. At the moment it's delivering full amount.

Capt. Thank's very much and for your information we'd like to start both engines in the bay. And, uh then we'll disconnect both the GPU and the COPCO and uh, pushback. Is that OK?

Ground That's fine with us. We'll keep clear of number 2 engine when you start.

Capt. Right, we'll just get start clearance and we'll be back with you shortly

Ground Standing by.

Capt. Thanks for the start.

Copilot. Durban Springbok 500. - *(receives clearance from control tower)*

ATC Springbok 500. Clear start up in the bay. Thanks. OK

Capt. I just want to call Blossom quickly.

Copilot. OK.

Capt. Blossom - cabin sterile. Blossom say's the cabin is sterile.
 Copilot. Right thanks.
 Capt. OK there might be a couple of thunderstorms en route. Just check with us before starting your tea and coffee service. Otherwise....go ahead...OK clear for start checklist please.
 Copilot. OK clear for start checklist is INS mode.
 Capt. NAV.
 Copilot. Beacon lights.
 Capt. On.
 Copilot. Window heat.
 Capt. On and low.
 Copilot. Take off data and MMO.
 Capt. Checked and set.
 Copilot. Circuit breakers.
 Eng. Checked.
 Copilot. Fuel pumps.
 Capt. ON.
 Copilot. Air bleed pressure.
 Eng. 45 PSI.
 Copilot. Doors and windows.
 Capt. Closed.
 Eng. Closed and locked.
 Copilot. Closed and locked my side. Before start checklist completed.
 Capt. Thanks. OK ground I'm going to leave the parking brake set. Unless you'd like me to disconnect now.
 Ground Uh, you can leave the parking brakes set.
 Capt. OK the parking brake is set we have not got push back clearance yet. We'd like to start engines 1 and 2 now. We're clear No. 1.
 Ground Clear number one.
 Capt. Thanks starting No. 1 at time 0450 that's 10 minutes early due to the Durban efficiency.
 Ground Thanks very much.
 Capt. OK we've read the checklist up to clear to start bye?
 Eng. Ja.
 Capt. Air bleed pressure we've got still.
 Eng. Checked.
 Capt. OK.
 Eng. So we can do a normal start.
 Capt. ... start No. 1.
 Copilot. OK.
 Capt. Time 50 for us.
 Copilot. Staying No. 1. Start valve open.

Capt.	N2. Would you take that thanks.
Copilot.	Thank you.
Eng.	With this pressure she'll spool up very quickly.
Capt.	OK I can hear the COPCO working very hard.
Ground	N1 Turning.
Capt.	Thanks. Fifteen, EGT.
Copilot.	OK it's fourteen seconds.
Eng.	You have a light up.
Capt.	Thanks.
Eng.	Positive oil pressure.
Capt.	Thank you. N1 40-5.
Copilot.	Start valve closed.
Eng.	543.
Capt.	543 checks.
Copilot.	Yip.
Eng.	Engine one parameter is normal. Generator on line
Capt.	Clear two.
Ground	Clear No. 2.
Capt.	Start two start 2 please.
Copilot.	OK starting No. 2 Start valve open.
Capt.	Thanks N2.
Ground	N1 turning.
Capt.	Thanks 15 EGT.
Ground	You have a light up.
Capt.	Thanks N1.
Eng.	Positive Oil pressure.
Capt.	40 5.
Copilot.	Start valve close.
Eng.	547.
Capt.	547 checks.
Copilot.	Checks.
Eng.	Engine 2 parameters normal.
Capt.	Thanks.
Eng.	Electrical checks completed.
Copilot.	Thank you electrical checks completed.OK right.
Capt.	OK shall we uh...
Eng.	Let's just disconnect the external.
Capt.	Shall we complete this checklist or should we disconnect first?
Eng.	OK fine (in between). After first engine start, request removal, OK we're doing both engines here. Proceed as per normal engine start, which we did. After engine 1 and 2 start, request

removal of external pneumatic power.

Capt. Shall I do that now? OK ground, you can remove the COPCO now, thanks very much.

Ground Removing the COPCO.

Capt. OK for external power and electrical.

Ground Right we'll remove it.

Capt. OK thanks. Alright, let's complete that checklist then. External power and COPCO removed.

Eng. OK cross bleed valve, it says auto and normal. Cross bleed valve to auto and normal. Engine 1 and 2 bleed valves to auto. Engine 1 and 2 bleed valves are in auto position. Proceed as for normal after start procedures. That's the end of the external pneumatic power checklist.

Copilot. Pneumatic power checklist.

Capt. External power external electrical power.

Eng. External engine start with external electrical power. Both engines are started with external electrical power, which we had. Proceed as for normal engine start procedures. After engine 1 and 2 engine parameters check.

Capt. Checked.

Eng. Generators 1 and 2 were checked. Engine sorry generators 1 and 2 on. Both on line after being checked. Checked gens 1 and 2 off light extinguished. Check external power light on extinguished, which was correct. Check both transfer 1 and 2 MI's crossline which they are. Request removal of external electrical power.

Capt. Was done.

Eng. Proceed as for normal after engine start procedures. That's the end of the checklist.

Capt. That's great.

Copilot. Thanks.

Capt. OK the after start uh, no let's get push back first, hey. OK Ground uh, we're ready for push back can I release the park brake?

Capt. Let's get clearance please.

Ground Clear to release the parking brake.

Capt. Thanks, just standby on the pushback.

Ground Standing by.

Copilot. Durban Springbok 500 requesting pushback.

ATC Springbok 500 clear to push back runway 05.

Copilot. Thank you push back 05 and intersection Bravo.

Capt. Ground you can push us back to face South for runway 05.

Ground OK pushing you back.

Capt. Thanks.

Ground OK push back is complete, will you please park the brake.

Capt. OK the parking brake is set. You can remove the tug towbar and the headset pin, thanks for your help.

Ground See you on the right hand side, enjoy your flight.

Capt. Ta, no guarantees there.

Copilot. I've got a tug towbar headset and pin and flags.

Capt. Thanks after start checklist please.

Copilot. OK after start checklist please.

Copilot. OK after start checklist is. Let me just put on my light. ... pitch trim.

Capt. On.

Copilot. Ignition start.

Capt. Start abort.

Copilot. Anti ice.

Capt. Closed off reset.

Copilot. Fuel levers.

Capt. Locked.

Copilot. Electrical power and load shed.

Eng. Checked and set.

Copilot. Hydraulics.

Eng. Checked.

Copilot. Brake fans.

Eng. Off.

Copilot. AP master switch.

Eng. Off.

Copilot. APU bleed and pack valves.

Eng. Closed and auto.

Copilot. Ground equipment.

Capt. Removed clear my side.

Copilot. Removed clear my side. Checked and after start checklist completed.

Capt. Thanks. I'll kick off if you can clearance please.

Copilot. Alright Captain. Durban Springbok 500 Taxi standing by departure clearance.

ATC Springbok 500. Clear to taxi to the holding point. Runway 05. You cleared Durban to Johannesburg. After takeoff 05 left. Correction maintain runway heading to 3000 feet and turn left heading 340. Climb to maintain level 60 and contact approach 119.1 passing 2000 feet. Springbok 500. *(copilot reads back the clearance)*

Capt. OK what have we got we've got 340 set 60 and 119 standing by.

Copilot. 660 set. Thanks checks.

Capt. All clear my side. Thanks we need 8 flap you can set it please.

Copilot. OK 8 flaps. Selecting and running. OK 8 flaps, 16 stats, Kruger blue you have.

Capt. Thanks departure checks please.

Copilot. OK.

Capt. OK you ready you're happy with the droop.

Eng. 10 droop checks.

Copilot. Control checks ailerons to the left, left spoiler, left aileron up, right aileron down zero to the right, right spoiler and aileron up, left aileron down on zero. Elevators down, full deflection

and zero elevators up, full deflection, zero Ready for the rudders?

Capt. Yes please.

Copilot. Left rudder coming in. Full deflection zero right rudder, full deflection - zero right speed and attitude is set for runway 05 intersection bravo. 43 in the box. We require 104.7 for the flex. I see 104.2.

Eng. That's to come.

Capt. Thank you.

Copilot. 8 flaps slats with the Kruger Blue. We have 2 1/4 units set. Ground spoiler armed, take off configuration tested. Your briefing.

Capt. Thanks very much um just before I start, bear in mind it's obstacle limited. It is VMC go uh, terrain, we'll do visual terrain avoidance.

Copilot. OK.

- Capt. We've discussed the contingency after the after the turn heading towards Jo'burg. We'll just turn back to the sea.

Copilot. Back to the sea Roger Captain.

Capt. OK gentlemen after 100 knots this will be a goal orientated takeoff, however in the event of a decision to stop before V1 which is 133 I'll close the thrust levers apply maximum reverse thrust.

Eng. I'll monitor the ground spoilers and the auto brakes.

Capt. Thanks. The ATC procedure is a non-standard um, off runway 05. Maintain runway heading to 3000 feet then turn left heading 340 got it in the course windows for reference.

Copilot. Checks Captain.

Capt. Climb and maintain level 60 - and contact approach 1191 passing 2000 feet. That's set standby.

Copilot. That checks.

Capt. And no squawk given, we'll use 2000. Engine failure procedure we have reviewed. It will be visual back here, 25 flap landing.

Eng. Confirm.

Copilot. Thanks Captain.

Capt. Thanks departure check list please to the line.

Eng. Departure checklist. Flight instruments.

Copilot. No flags.

Eng. Flaps and stats.

Copilot. Sorry Captain, we've just lost the flight director again.

Capt. OK thanks.

Copilot. H....Oh no. OK thanks could we start again please thanks.

Capt. OK.

Eng. Departure checklist flight instruments. OK.

Copilot. No flags.

Eng. Flaps and stats.

Copilot. 8 flaps 16 flats, with the Kruger Blue.

Eng. Flight controls.

Copilot.	Checked.
Eng.	Stabilizer trim.
Copilot.	2 units nose up set.
Eng.	Takeoff data.
Copilot.	Checked and set.
Eng.	Ground spoilers.
Copilot.	Armed.
Eng.	Take off config.
Copilot.	Tested.
Eng.	Fuel is set for takeoff it's to the line.
Copilot.	Thank you.
- Capt.	Thanks Ag, won't you tell them we're ready for....
Copilot.	Ready for departure.
Capt.	Ready I mean.
Copilot.	Durban Springbok 500 ready.
ATC	Springbok 500 you're cleared takeoff runway 05, the wind is 010 at 5 knots.
Copilot.	Clear takeoff 05 Springbok 500. OK.
Capt.	I see nothing on the approach. Clear takeoff I'm off the brakes.
Copilot.	OK thanks.
Capt.	The departure checks below the line please.
Copilot.	Thank you.
Eng.	We're clear for departure. Cabin crew please take up your seats.
Copilot.	Thanks, the checklist please.
Eng.	Departure checklist below the line is, cabin crew is seated, brake fans off takeoff briefing.
Copilot.	Complete.
Eng.	Pacs going off, probe heats on, lights and ignition on, auto brakes.
Copilot.	Max.
Eng.	Master warning.
Copilot.	Recall takeoff inhibit.
Eng.	Just standing by the pacs closing
Copilot.	Roger.
Capt.	Clear your side.
Copilot.	Affirm Captain it's clear my side.
Capt.	Thanks and my side.
Copilot.	OK Captain the wind is from the left for the evacuation.
Capt.	Thanks OK bear that in mind, 010 very much from the left OK evacuation nose pointing left.
	Thanks.
Eng.	The pacs are closed N1.
Copilot.	Checked.

Eng.	Transponder.
Copilot.	ON.
Eng.	Um, the departure checklist completed.
Copilot.	Thank you.
Capt.	Thank you. OK gents standby take off please.
Copilot.	Standing by.
Eng.	Standby.
Capt.	Stabilizing. They're stable set flex thrust please.
Eng.	Setting flex thrust.
Copilot.	N1 SRS.
Capt.	Thank you.
Copilot.	Flex thrust set.
Capt.	Thanks.
Copilot.	100 knots.
Capt.	Checks.
Copilot.	V1. Rotate. Positive rate of climb.
Capt.	Gear up please.
Copilot.	OK gear clean.
Capt.	Thanks Cruise thrust please.
Copilot.	OK cruise thrust selecting.
Eng.	Setting cruise thrust.
Copilot.	Selecting 11901.
Capt.	Thanks.
Eng.	Cruise thrust is set.
Capt.	Thanks.
Copilot.	Durban approach Springbok 500, airborne 05.
ATC	Springbok 500 good morning you are identified 3 nautical miles North of the field proceed as cleared. OK.
Capt.	I'll just keep 8 flap until we've completed the turn.
Copilot.	Roger OK Approaching 3000 feet left heading 340 Captain.
Capt.	Thanks check Heading 340 now thanks.
Copilot.	340 selecting.
Capt.	And if you can give us 0 to 3 and...
Copilot.	OK.
Capt.	That's Warden isn't it.
Copilot.	Affirm Warden is 3.
Capt.	Cross track error.
Copilot.	A... zero 3 roger and 37 Ah, 34 right.
Capt.	Ta, thanks VFT0 please.
Copilot.	OK VFT0 selecting VFT0 you have.

Capt. Thanks Flaps up please.
 Copilot. Speed checks.
 Eng. Selecting and runway.
 Capt. Thanks.
 ATC Springbok 500 on passing 4000 feet you can turn right to Warden and climb to and maintain level 310.
 Capt. Slats up please.
 Copilot. Speed checks selecting and running. Springbok 500 passing 4000 feet right direct Whiskey Delta Victor - Climb level 310 Springbok 500
 Capt. And it it's running 300 knots please.
 Copilot. Roger Captain 310 it is.
 Capt. 310 I see.
 Copilot. Roger 300 knots and it's running and....
 Capt. Thanks a lot. That's 4000 feet we can go zero to three please Insert
 Copilot. OK.
 Capt. INS NAV this side.
 Eng. Thank you.
 Copilot. Zero three.
 Capt. Unstrap them please.
 Eng. Thank you.
 Copilot. OK insert Zero left.
 Capt. Select NAV one please.
 Copilot. OK NAV selecting.
 Capt. NAV green.
 Copilot. NAV green checks.
 Capt. Distance and time there please.
 Copilot. Thank you.
 Copilot. OK slats are up OK.
 Capt. I just going to cancel SLS selecting IAS.
 Copilot. Amber.
 Capt. And cancelling IAS.
 Copilot. Pitch Amber coming through 250 set standard.
 Capt. 1013 my side.
 Copilot. Set my side.
 Capt. Selecting IAS.
 Copilot. IAS Amber.
 Capt. And selecting auto pilot number 1 and selecting IAS again.
 Copilot. OK and command IAS amber.
 Capt. Thank you.
 Capt. Airborne time there, have you got it?

Eng. Airborne time was, uh 92. Sorry what am I saying, 92, 02.

Copilot. 02 thank you.

Capt. Five minutes ago.

Copilot. Five zero two OK 10, 2, 5 minutes before schedule.

Capt. 10,2, so that's...

Copilot. 50 So that 05 50 five minutes before schedule.

Capt. 05 50 is that right.

Copilot. Affirm.

Capt. So 750. It's 05 50.

Capt. 750 local thanks a lot. That including approach.

Copilot. OK for the approach make it about 55.

Capt. OK 55 chocks.

Copilot. Chocks OK.

Capt. I'll talk to the passengers in a minute.

Copilot. OK Captain.

Capt. Meantime let's leave November Hotel there and Juliet Sierra standing by looks good

Copilot. OK.

Capt. And I'll give you zero to 2 for the FIR boundary. IVORI hey.

Copilot. OK thanks. and the code is checked.

Capt. Thanks a lot. I just realized I missed that out on the... in the preflight panel scan.

Copilot. In the pre-flight... OK.

Capt. You know, because of the configuration of the radar I went straight from there to there instead of going across there. OK I'm just cancelling IAS for a second.

Copilot. OK pitch Amber.

Capt. Thanks.

Copilot. OK I'm going to select Whiskey Delta Victor my side Captain.

Capt. Ah, yes please I'm selecting IAS my side.

Copilot. OK IAS Amber.

Capt. Ta.

Copilot. 1148.

Capt. As soon as we get it in range I'll take it my side and if you could take Heidelberg your side.

Copilot. Roger Captain. OK I've got it pointing and ... no coding as yet.

Capt. Thanks.

Eng. It takes a bit of time that coding.

Copilot. Ja, no coding as yet.

Eng. Coming up level 100 after take off checklist completed.

Copilot. Thank you.

Capt. Thank you 100 checked.

Copilot. And your ticket.

Eng. Thank you.

Copilot. OK coding checks Captain needle's pointing.

Capt. Ta.

Copilot. Like it your side now?

Capt. You know it's quite an interesting point this normal procedures change uh, someone suggested the other day that as I am on INS NAV with uh, with INS selected on my HSI that, that should be it is the active radio side and you should be doing the radio monitoring.

Copilot. Radio monitoring.

Capt. You know on the route we never do it that way.

Copilot. Mm....

Capt. The pilot flying always uses 1148. I think it's probably just a habit we got into on the Durban sector. You see what I mean?

Copilot. Ja, no I see.

Capt. Strictly speaking you should sit with it there.

Copilot. Ja.

Capt. You're in charge of radio navigation. I'm monitoring INS navigation.

Copilot. INS. ja.

Capt. Do you buy that?

Eng. Yes, Captain.

Capt. You know that's something we've got to think about hey for the next revision.

Eng. Ja.

Capt. Or put it this way sorry, it's no change to the normal procedures. It's the way we fly the Durban section.

Eng. Ja. Well now that, that new normal procedure is on my computer in MsWord 6 it's going to be a sinch from now on.

Capt. Ja.

Capt. I've just got Bucks on the fourth floor to virtually agree on reformatting the FIT manual which is in Ventura Publisher. I don't know if you know how thick the FIT manual is.

Eng. No.

Capt. It's like that and it's fine print.

Eng. And is he going to do it?

Capt. Well, he hasn't committed himself yet, but I might just get him to do it and put it into MSWord, or Word Perfect. Probably MSWord I guess. OK I'm just going -no I'll wait for 50 miles and uh, for the hand over and then I'll talk to the pacs.

Copilot. OK Captain.

Eng. Have you got a plate for 03 left Johannesburg?

Copilot. Right I'll set it to you just now.

Eng. Ta, thanks.

Capt. Shall we,... shall we make a card for 03 right and hope for a sidestep 03 left?

Copilot. Sidesteps, sidesteps OK.

Eng. OK fine.

Capt. And I'll brief for an ILS 03 right and a visual 03 left.

Copilot. That's uh, a Durban chart.

Eng. You know they've changed these performance manuals, but we haven't had any notification about it.

Capt. No, but have they changed them in the aeroplane yet?

Eng. Yes.

Copilot. Yes, ja they have.

Eng. I was looking at it yesterday. I can work it out for myself, but it's ah.

Capt. It's very bad you know.

Eng. So the first officer actually asked me what's going on. So I had to explain it to him, but in my own interpretations.

Capt. Is there no briefing notice on the files?

Eng. No.

Capt. Because they've prepared it and I think the intention was to get a briefing notice out.

Copilot. Captain I did see a briefing notice somewhere.

Capt. Was there?

Copilot. There actually has and that they were depicting that they were depicting the actual intersections on there...

Eng. OK alright. I haven't seen that I haven't flown for a few days now.

Eng. OK alright I never picked that up.

ATC Springbok 500 Early handoff to area. You are now 42 miles. Change to area 119.9 Goodday to you.

Copilot. OK Springbok 500 distance checks 1199 goodday to you 119,9 uh, set.

Capt. Ta.

Copilot. Durban area Springbok 500 119,90.

ATC Springbok 500 Good morning to you. Ah, continue climb level 310 call reaching please.

Copilot. Thank you continue climb 310 will call you reaching. Springbok 500.

Capt. OK that's November Hotel should we take Juliet Sierra.

Copilot. OK thanks.

Capt. And um I tell you what, let's take 420 445 anticipating 03 right initially.

Copilot. Affirm. OK runway 3 right, the outer marker is 420 the missed beacon will be 445.

Capt. OK.

Copilot. And 03 left outer marker 220 do you want to put the outer marker initially?

Capt. Ja I think just the outer marker and the missed approach for 3 right and if we go 3 left we'll just swing across.

Copilot. OK Captain.

Capt. There's no coding yet on Juliet Alpha.

Copilot. Alright. Here the plates.

Eng. Thanks.

Capt. OK I'm going off the air for a second.

Copilot. OK.

To passengers.

Copilot. OK Captain no change in the radios.

Capt. Thanks very much.

Capt. Should we go climb, gents.

Copilot. OK.

Capt. You're ready?

Eng. Thank you.

Capt. OK selecting climb.

Eng. Setting climb thrust. Climb thrust is set.

Copilot. I wonder what they'll use today in Jo'burg 267 or 283. If I select one they'll use the other.

Capt. Ja, you're got about a 50% chance. It seems to be completely random. Are you finished with 1216?

Eng. Affirmative thanks.

Capt. Thanks 1215 now. Thanks.

Eng. Seem to be cancelling a lot of flights lately.

Copilot. Ja.

Capt. Gees...

Eng. I had a double Durban, it was just the last two legs I did. Sunday I'm doing a double Durban. I don't think they'll cancel Sunday flights.

Capt. And how about Cape Town -do you find the same thing there?

Eng. Yes, I was supposed to do the other day, in actual fact yesterday. Durban and back Cape Town and back and we just did the Durban and back.

Capt. Ja.

Eng. And the morning before was a total fowl up. With that we did the Flitestar flight. 15 minutes before the normal 7 o'clock Durban one.

Capt. Ja.

Eng. We left at quarter to 7 we were 5 minutes late so we actually took off at 10 to 7.

Capt. Ja.

Eng. They pushed back and they aborted takeoff with that smoke in the cockpit, passengers and we had 31.

Capt. Ooooi...

Eng. Gosh you know so you would think that somebody would think quickly and tell us to come back and tell us to pick the pacs up. So they organized a Jumbo to fly the pacs down.

Capt. Oh no.

Copilot. No.

Eng. And the crew was night stopping so they pacs down in the Jumbo with the rest of the passengers.

Capt. And that's an expensive exercise.

Eng. But they could have just told us come back.

Capt. Ja.

Eng. You know we would have been about a third of the way to Durban, come back landed, picked up as many we could have taken, virtually all of them.

Capt. Ja.

Eng. And uh.

Capt. OCC could have done that.

Eng. Ja.

Capt. I suppose the crew on the ground were too occupied with what they were doing there.

Eng. Ja.

Capt. Maybe they thought they'd be able to sort it out quickly or something like that.

Eng. Ja.

Capt. What did it turn out to be?

Eng. I haven't heard, found out. Ja it must be airconditioning. It must be hydraulic fluid in the airconditioning duct. Remember we had that a few years ago? It was a big problem. What they do is they overservice green system and with the pressure pipe that comes in from the pneumatic system.

Capt. Ja.

Eng. From the, you know the ...

Capt. To pressurize the tank?

Eng. Ja to pressurize the tank because it's over serviced, the fluid gets in there and shatters the spring on the non-return valve. And then that fluid goes in and shatters the spring. And they took off with pacs on APU.

Copilot. OK.

Eng. Because they had so many passengers on board and of course they pumped the fluid. Hydraulic fluid ja, and that burns eyes instantaneously. It's quite bad on the eyes.

Capt. Was it quite bad smoke in the cockpit?

Eng. Yes, initially they started feeling their eyes burning and then they got the smoke in the cabin as well as the cockpit so they aborted. I don't know what speed they aborted at.

Copilot. And they said that they apparently hadn't reached 100 knots yet.

Eng. Is it?

Copilot. Ja they were lucky they were still at low speed.

Capt. Ja, but look it's into Smuts hey. So you can take a bit of licence with a 100 knots there if there's bad smoke in the cockpit.

Copilot. It was lucky it didn't happen in the air. Cause that thing burns quiet badly in the eyes. Critical time.

Capt. Ja.

Capt. If it atomizes you know it probably looks like smoke but in actual fact, it's atomized hydraulic fluid itself. It's not as if it's a gas. It's not vaporized.

Eng. No.

Capt. And that why it burns, hey.

Copilot. How much authority do the guys in traffic have to authorize that sort of a change, and come back and use another aircraft?

Eng. I wouldn't know.

Capt. I think they have the authority ja, OCC. I think they have the authority.

Eng. Gonna upset the 31 passengers, but uh, so what.

Capt. Ja.

Eng. They're 249 on the other side.

Capt. I mean they control the movements on a day-to-day basis because I remember when we were in Durban and we had two Airbuses with very low loads and we requested that they be taken on one, and the other aircraft just stays for later departure. Um, there was a lot of trying to phone around and couldn't get along and couldn't get through and time was going and eventually we just left.

Capt. Ja.

Copilot. That is, the guys in Durban didn't have any authority.

Eng. But the traffic has a lot of authority because if they want to combine a flight, or there's passengers coming in from a flight after you, and they want to put them on board they can actually just hold you back.

Capt. Ya they do it.

Copilot. Oh yes right they do it.

Eng. The captain can only, once the doors are closed take control.

Copilot. Ja.

Capt. Ja.

Eng. Because before the doors are closed, I've seen it happen before, where the captain's got upset and traffic said "I'm just keeping the flight open I've got passengers for you".

Copilot. Ja.

Capt. Ja.

Eng. So it's not worth getting too involved.

Capt. No, but even after the doors are closed I think the company can quite happily say to the guy, "look we need you to turn back, please turn back, and uh, as long as the safety of the aeroplane is not impaired I think.

Eng. I think it's fair.

Capt. It's fair ja, You know it's not as if the company's involved in a diversion decision or an operational problem where safety is involved.

Copilot. I, I don't know one of the things I'm just thinking about in terms of suggestion, like in the States, we used to do this a lot. When you found that the flights were pretty much empty, what they would actually do is say is they would ask if the gentlemen, you know if you don't mind taking a later flight, and those of you who really need to get out there they'll you know, make arrangements and they'll just pay them a R100, \$100 each and just give them each a voucher like that, and I mean that's nothing to what you'll spend in operating the aircraft half empty. Um, and we used to do that, we used to get out into the States early in the morning, land there early and you spent that whole day just being either bumped off a flight, because now the next flight is full, so they give you a \$100.

Capt. As a rebate passenger or full paying?

Copilot. Full paying passengers. But we did it, and that way when the aircraft was operating it was operating with the right sort of loads.

Eng. Keep getting bumped, you get about \$500 a day.

Copilot. Easy, easy.

Capt. No, I must say I do find the Americans are far more, ah, better equipped to react to market conditions.

Copilot. Market conditions affirm mm. But I think you know I personally don't believe passengers really get that. If only the business passengers who had got a commitment that and stuff that would really mind, I don't know.

Capt. Um. Ja it's a flight like this where they get a bit touchy you know, if they are five minutes late in Jo'burg, they get a bit touchy, they are onto their cell. phones.

Eng. Those cellular phones are a nuisance in Hong Kong. I suppose they'll become a nuisance here, I actually took the wife and kids to a restaurant the other night, just the Spur you know, just for a quick Sunday supper and there was a guy sitting next to us with his cellular phone talking into it and that they've actually banned it in a lot of Hong Kong restaurants because you'll have about 15 20 people all yapping at the top of their voices.

Capt. Ja it's quite ridiculous.

Eng. Doing business at mid-night.

Capt. It's quite ridiculous.

Copilot. Point 78.

Capt. Thanks cancelling IAS.

Copilot. Pitch up bar.

Capt. Sit 289 here.

Eng. It, one to go.

Capt. One to go.

Copilot. One to go. It looks like we might just be experiencing this turbulence of the weather forecast with the squall lines.

Capt. Ja I see there are a couple of isolated storms around, you might just have to go around a couple in fact lets go left over here selecting heading. I'm going left a few of degrees and going VOR LOC mode and cross track error here. OK.

Copilot. OK Roger.

Capt. You've got WDV that side. (*Beacon for navigation*)

Copilot. WDV affirm.

Capt. That's fine.

Copilot. And ALTSELL green.

Capt. Thanks selecting Speed SEL.

Eng. Thank you.

Copilot. Speed SEL we have.

Capt. 289.

Eng. Thank for cruise mode.

Copilot. OK.
 Capt. Thank.
 Capt. Cruise I see, thank you.
 Copilot. Springbok 500 maintaining level 310.
 ATC Springbok 500 thank you maintain 310 and the FIR next.
 Capt. Might as well take Smuts this side.
 Copilot. Roger and FIR being at about 125 miles. 125 miles affirm.
 Capt. Alt I see. I'm just going for a quick leak, chat to the hostie at the back.
 Capt. You've got it.
 Copilot. OK I've got it Captain thanks.
 Capt. We are 9 left.
 Copilot. 9 left thanks.
 Capt. Jo'burg is very much what the forecast says. METARS here.
 Eng. OK I've copied it.
 Copilot. OK Thanks.
 Capt. The metar there.
 Copilot. OK the metar we had,... we the 400 metar.
 Eng. Ja that's right.
 Copilot. OK I've got that.
 Eng. That's the wind at 020 5 knots.
 Copilot. Affirm good vis. scattered 2000 is 1020 .
 Eng. That checks.
 Copilot. That's I reckon 03.
 Eng. In heading select.
 Copilot. Heading select cross track error is checked.
 Eng. Right.
 Copilot. Let's advise them, Durban Springbok 500. OK 500 we just turned slightly left for weather avoidance 10 degrees left level 310.
 ATC Thank you weather avoidance as necessary Springbok 500
 Copilot. Thank you Springbok 500. OK let's look on the weather radar on norm.
 Eng. Unfortunately these don't display here.
 Capt. OK.
 Eng. Ja.
 Copilot. I'm hopeful it.... this joint, airline, that they are talking about, works out.
 Eng. Which one is this?
 Copilot. You know, you have heard about the briefing about this, that SAA was looking to getting into a joint venture with Ugandan Airline and Tanzanian Airlines and making a joint African Airline.
 Eng. Hell, haven't heard that. Where did you read that?
 Copilot. I first saw it in the newspaper, in fact I first heard about it in Durban when the guys were

talking about it, then that same day I read about it in the newspaper.

Eng. Oh, I missed it.

Copilot. And OK we are coming up to the boundary WDV. Springbok 500 checked the boundary level 310.

ATC OK Springbok 500 change to Johannesburg on IR 8.3.

Copilot. Thank you Jo'burg 283 good day.

Copilot. OK Standby for clearance.

Eng. Thank you.

Copilot. What was that? - a bang?

Capt. Lightening.

Copilot. Um.

Eng. Lightning, just like... ja, we are getting an over frequency on our AC busses, we are going to have a problem with our generators, there we go.

Copilot. Generator OK.

Capt. OK you've got it.

Copilot. OK I've got it.

Eng. I'm just checking thrust on the motor OK we have 2 engines. It's dual generators failure.

Capt. N1 and EGT we have.

Eng. Yes, you confirm that?

Copilot. Dual generator failure recall item I've got no instruments I'm on standby.

Capt. You've got standby instruments.

Eng. Recall items - it's continuous re-light - it's on. OK checklist.

Capt. Dual generator checklist.

Eng. Confirm - we have 2 engines.

Capt. We'll do that in a second - you happy?

Copilot. OK thanks.

Capt. I think continue on this heading. Can we go back to that WDV - you've got nothing that side?

Copilot. WDV and nothing else on my side.

Capt. Try and contact ATC and see what they say. Try and get radar vectors to Heidelberg initially, proceed to Johannesburg. It's a longer runway we can talk about it in a second. Maintain 310 and back to Heidelberg. OK.

Copilot. Wildo Captain. Johannesburg Springbok 500. Captain you want to squawk emergency?

Capt. No I don't think so.

Copilot. OK Thanks.

Capt. Is there no response from Johannesburg?

Copilot. No response from Johannesburg. I'll try again. Johannesburg Springbok 500 1283. Should we go back to Durban because we had last comm with them? Captain.

Eng. That's a good idea.

Capt. If you like let's talk to them quickly.

Copilot. Durban Springbok 500 119.9.

Capt. Nothing?
 Capt. Won't you check circuit breakers quickly for VHF.
 Copilot. Circuit breakers. Thanks.
 Capt. OK you just fly this machine OK.
 Copilot. OK.
 Capt. It's not easy flying on this instrument. 31 000. It looks like we've had damage - watch speed, watch your speed there.
 Eng. Speed watch your speed there.
 Capt. Speed get your thrust up.
 Copilot. OK I'm getting the thrust up.
 Capt. We've got 20 N1 here indication.
 Copilot. OK.
 Capt. OK let's laugh off the communication for the moment. Just get the thrust up.
 Copilot. OK thanks.
 Capt. I see we have got N1.
 Copilot. N1 failure.
 Capt. Indication failure in fact it looks like we are flaming out.
 Copilot. Both engines are out EGT's have gone down, Captain.
 Capt. OK let's go down, we've got gravity feed. Is that right?
 Eng. Affirmative Captain.
 Capt. OK let's go down to 25 000 feet initially.
 Copilot. 25 thanks Captain.
 Capt. And get the speed up.
 Copilot. Right.
 Capt. Speed up as soon as possible - no the engines are....
 Eng. The engines are flaming out we've got EGT's below 350. we flaming out.
 Capt. OK let's get RATS then.
 Copilot. RATS put in.
 Capt. Let's do that dual generator. In fact they confirm they have flamed out, let's just check that.
 No response.
 Copilot. No response.
 Eng. No response at this stage.
 Capt. OK. Let's get 250 knots.
 Copilot. 250 knots Captain.
 Capt. There's no.... the bug is not moving 250.
 Copilot. OK.
 Capt. I'm going to squawk 77 hundred.
 Copilot. OK.
 Capt. That's preferable over communication failure I think. OK you've got squawking 77 OK?
 Copilot. 77 Affirm Captain.

Capt. OK Watch these engines, these engines are spooling up again. Oh, that's fine.
 Eng. There they come.
 Copilot. Got 250 knots.
 Capt. OK.
 Copilot. Can we go down to level 260?
 Capt. Let's go to the dual engine failure checklist first and then we go to the engine generator failure. OK 250 knots, maintain 250 knots and level 250.
 Copilot. 250 now thanks we'll go down to 250.
 Capt. Thanks let's go both engine flame out.
 Eng. OK they are stabilizing slowly, but surely.
 Copilot. Captain, we need to go 260, we're going even level directions. Shall I make it 260?
 Capt. Ja 260's fine, as long as that speed stays at 250. Just watch these engines hey.
 Eng. OK.
 Capt. Why have we got ah.... you see they haven't actually come up yet.
 Eng. No.
 Copilot. Nothings come up yet.
 Capt. Alright.
 Copilot. The EGT's are up.
 Eng. So it is spooling.
 Capt. OK both engine flame out checklist please .
 Eng. OK both engine flame out checklist. Ignition continuous re-light both A and B. RAT on.
 Copilot. RATS are on.
 Eng. Throttles idle.
 Capt. Just confirm you have ah....
 Copilot. Negative 250 knots.
 Capt. You've got hydraulic pressure there.
 Copilot. Negative 250 knots I'm going down to 240.
 Capt. OK that's fine.
 Eng. Throttles idle.
 Capt. Grid MORE 14, we can go right, we can go lower let's go to 22
 Eng. 22 thanks.
 Capt. 22 000 OK.
 Eng. Thank you.
 Capt. Throttles.
 Eng. To idle.
 Capt. Are we are you happy that they aren't spooling up normally. Should we do that OK go throttles idle.
 Copilot. Throttles idling idled.
 Eng. Fuel supply check we have on gravity feed at the moment. IA and ZA would be gravity feeding.

Capt. OK.

Eng. OK at the time of the dual generator failure we had 13800 fuel in tanks.

Capt. OK.

Eng. That was frozen from then on.

Capt. Alright.

Eng. OK.

Capt. At that's a 0530.

Eng. Ja.

Capt. OK go ahead.

Eng. Fuel supply check we've done that. Optimum speed 250.

Copilot. 250 knots.

Capt. 250 knots let's try and maintain 250. We're coming up a 1000 to go. Let's go down to 20. Are you happy with 20?

Copilot. OK 20.

Capt. OK the lower we can get the better hey. 20 000. Yes please.

Eng. Communications VHF 1 and ATC 1.

Capt. OK we've tried I think there's damage there. uh.

Eng. Ja we don't seem... it seems we lost ...

Capt. ATC, ATC, ATC 1. OK.

Eng. OK we've lost coms by the look of it. If neither engine starts within 45 seconds. Uh, let's just uh. Well they are at idle and the EGT's are right. Let's just see if they don't spool up. Just take them off idle.

Capt. Try, try, try them. It should spool up now.

Eng. There's something else wrong here. What is going on?

Capt. OK that's two to go.

Copilot. 2 to go thanks.

Capt. OK they're not spooling up.

Eng. They're hanging there.

Capt. Shall we go lower?

Eng. Yes.

Capt. Let's go down to grid MORA 14.

Copilot. 14.

Capt. 14 000.

Copilot. Thank you. Confirm the beacons are not working, are they working?

Capt. Ja, nothing's working, I tell you what let's go back to...

Eng. 340.

Capt. 340.

Capt. In fact 350 because we went left due to weather.

Copilot. OK thanks.

Capt. The bugs aren't working either, hey?

Eng. OK it says if neither engine starts within 45 seconds. Fuel levers.

Capt. Standby. they're spooling up. Just confirm this.

Copilot. Make further adjustments.

Capt. They are spooling up 1.

Eng. There they go.

Capt. OK let's just try and get some thrust now.

Copilot. Affirm we're getting it.

Capt. OK just watch out for overspeed, watch for overspeed, overspeed.

Copilot. Overspeed.

Eng. Ja.

Capt. OK I'll tell you what Ah, this is not there....

Eng. There are no selection.

Capt. There're no selections. Should we go for 105 initially hey.

Copilot. Thank you.

Capt. 105 and then use that as a limit until we can get a limit.

Copilot. Thank you.

Capt. Shall we maintain 20 000?

Copilot. Roger.

Capt. OK 20 000 settling.

Copilot. And we've just got a master warning system fault light coming up now.

Eng. Ja that's just electrics.

Capt. A whole bunch of things. We'll come to that shortly. 20 000 and that heading. 348 uh 350.

Copilot. 350 got the ... need to turn slightly left.

Capt. If you could stabilize on 20 000 and that heading I'll see if I can get a radio aid shortly. Let's complete that checklist and then we'll go back to the electrical checklist.

Eng. OK if engine recovered.

Capt. OK they've both recovered. Are you happy about that?

Eng. Ja. Ah systems.

Capt. N1, EGT, and we don't know about the rest of... have you got some indications in the back there?

Eng. Ah, there'll be none here that's all dead.

Capt. OK That's fine.

Eng. So we've got both engines back. So this is basically the end of the both engine flame out checklist. We've got to do the dual generator checklist.

Capt. Dual generator, let's go.

Eng. Loss of both engine generators. Ignition continuous re-light, A and B it is continuous. Transfer 1 and 2 off. Transfer 1 and 2 off. Generator 1 and 2 off. Reset, then on 1 and 2.

Capt. Yip.

Copilot. I'll just keep trying Jo'burg again Captain.

Capt. Yes please if you would we'll consider HF just now as well.

Copilot. Johannesburg, Johannesburg Springbok 500 I'm getting codings now on the beacons.

Capt. Ah, I've got a coding on yes I've got a coding on Juliet Alpha, hey.

Copilot. Thank you Juliet Alpha is on number....?

Capt. On number one standby let me see if I can take...

Eng. Number 1 is going to trip again Captain it's over frequency. There she goes. OK dual generator failure. With no recovery.

Capt. You work on that for a second.

Copilot. Johannesburg, Johannesburg Springbok 500.

Capt. I'm gonna take 1167 on this side and see if I can get some coding on this side.

Copilot. OK Captain.

Capt. OK. Johannesburg, Johannesburg Springbok 500. OK. There's no contact we'll try on HF shortly uh, let's try.

Copilot. OK.

Capt. On WHF 2 as well, I don't think we're going to have any possibility there. 1283 uh, I tell you what let's try 1247 uh 5 OK 1245 selected on 1 you can do that.

Copilot. OK thank you 1245.

Capt. And in fact it's selected on 2 as well.

Copilot. Johannesburg radar, Johannesburg radar Springbok 500 on 1245.

Capt. How are you going? No dice there?

Eng. No dice Captain.

Capt. I'll be with you in a sec. I just want to navigate quickly. I've got a needle to the right for Hotel Golf Victor let's go to the right.

Copilot. That's about?

Capt. That's about 020.

Copilot. 020 OK that's displacement about 30 degrees.

Capt. OK we can bring the speed back to 250 knots just for comfort here.

Copilot. Thank you.

Capt. And let's enter the hold.

Eng. That's in about 10 seconds.

Capt. At Hotel Golf Victor.

Copilot. Thanks.

Capt. Lost communications procedures. If you can just think about that in the meantime.

Copilot. Right Captain.

Capt. We haven't been given a star yet. (*Standard Arrival Route*)

Copilot. Negative.

Capt. There was no star on the flight plan.

Copilot. Affirm.

Capt. Shall we follow the general lost communication procedures? In other words go to Juliet Sierra

Copilot. OK.

Capt. We go via Hotel Golf Victor to Juliet Sierra to enter the hold. Enter the hold at Juliet Sierra at this level.

Copilot. Affirm 200 Captain.

Capt. Hopefully they'll be getting something else on this transponder and they can see at what altitude we're at.

Copilot. Roger Captain.

Capt. Do you agree with that as a general principle?

Copilot. OK um.

Capt. In other words you bypass the lost communication procedures on the star.

Copilot. Lost communication procedures of hold over hotel golf Victor, we'll route overhead Hotel Golf Victor. Juliet Sierra, into the hold at Juliet Sierra at flight level 200.

Capt. OK you've got?

Copilot. And reaching level 200 now.

Capt. OK 2000 that's fine. And there's the hold at Juliet Sierra. It's a right hand pattern, 031 inbound. You happy about that?

Copilot. OK I'm happy about that?

Capt. At 20 000 and remember the speed's uh we're looking at what 240 knots?

Copilot. 240 knots affirm.

Capt. I'll set 240 later on. You can fly that OK. You happy?

Copilot. I'm happy with that Captain thank you.

Capt. Let's complete the dual generator checklist then.

Eng. OK we got as far as generator 1 and 2 off reset then on.

Capt. Right.

Capt. But they both over frequency and they're damaged so we can't get them back.

Capt. OK, lightning has taken GCU's out or something like that. OK.

Eng. If no generator recovered, caution. Avoid throttle, rapid throttle movement and negative load factors.

Capt. You get that?

Copilot. Roger Captain. OK No throttle movement. Thanks OK.

Eng. Land as soon as possible.

Capt. Right look, Jo'burg is closest, we've got no DME here but we'll tell our distance by passage over Hotel Golf Victor. I'm a little bit worried about this uh, we should have my RMI is out OK.

Copilot. OK. But the needle.

Capt. The needle says inbound 020.

Copilot. OK.

Capt. I would say that we're heading that way. Do you follow this do you follow this? Just check me on this here.

Eng. I see standby is one ja.

Capt. OK the needle is pointing on the RMI to 025. We're heading 025 we should be going right overhead. Do you see what I mean this, this RMI is giving duff gen over here.

Eng. Yes.

Capt. It's rather confusing do you agree with me?

Copilot. Affirm and it said the needles will be pointing in the right direction.

Eng. But the but the...

Copilot. With the magnetic ja, but even through the compass doesn't move, so we should be going at 020 we should pass overhead.

Capt. OK just check for movement of the head of that needle.

Copilot. OK thanks Captain.

Capt. Are you happy with flying it like this?

Copilot. I'm happy with flying it like this? OK.

Capt. Alright.

Eng. Alright avoidconditions we don't have.

Capt. OK we've past those storms now.

Eng. Communications VHF, ATC, we still have problems.

Capt. OK and we've tried on two and we can perhaps try on VHF. Have you tried on VHF?

Copilot. No I haven't tried HF.

Capt. If you have a chance just try on that OK.

Eng. Max speed 275 mach 78.

Capt. OK 275 we're maintaining 250 we'll come back to 240 in the hold.

Eng. Use rudder with care above 165 knots.

Copilot. Affirm.

Eng. OK we're in the 10-10 speed mode in other words we've lost protection.

Capt. You've got that? You've got full rudder travel.

Copilot. I've got that thanks Captain.

Eng. Avoid large elevator inputs, for some reason. You've lost your feel. Max flight level 250.

Capt. OK we're 200.

Copilot. 200.

Capt. That's what hurt us originally.

Eng. Or MGA ja.

Capt. OK.

Eng. Tank 1A and 2A shut off valves check in line 1A and 2A shut off valves are in line. Tank 1 and 2 shut off valves.

Copilot. Johannesburg, Johannesburg Springbok 500 on 8933.

Capt. Yes, go ahead.

Eng. If quantity below 500 kilos, close we still have more than 500.

Capt. OK we're going to have to check out to see whether we have accurate gauge indications or not. I suspect not.

Eng. No they're frozen.

Capt. OK alright.

Eng. Battery on. The battery is in the on position all 3 batteries. Buzz equipment list 21 check.

Capt. we'll do that now. Let's just note beyond 42 minutes, OK 29 with APU not applicable hey.

Beyond 42 minutes total loss of electrical power may occur. And of course nose wheel steering is in-op, which we know about because we don't have the normal DC BUS.

Capt. It's worth for that reason flying faster into Johannesburg because we might have a time problem there.

Eng. Yes.

Capt. Nimo.

Copilot. Yes. Sorry Captain about 42 minutes.

Capt. We have a problem as far as speed here. It says here max speed 275 left go to 275 at least. In fact let's go to 275.

Copilot. Roger.

Capt. We don't want a full electrical power failure on this aeroplane.

Copilot. OK can we have a way point change on the INS. I see the INS is still giving us some track.

Capt. Ja, there's a battery light over here, I don't... it's a good point Heidelberg is number 4.. hey, OK number 4.

Copilot. Heidelberg, I had it, is number 4 affirm.

Capt. Number 4 there we are, that's excellent navigation. Let's try that, just go right here.

Copilot. Roger.

Capt. 8 left, go right a few degrees.

Copilot. OK Captain.

Capt. Make it about 030 see if that changes. Let's just check here distance to 4, 17 miles. This is looking good. We've got 17 miles to Heidelberg. That could be right, we've got 15 minutes of battery on that INS so we've got some navigation information at this stage. Cross check. Are you happy?.

Copilot. OK thanks Captain.

Capt. OK that's on track right now.

Copilot. On track.

Capt. OK it's about 03. 029. I'll leave it with distance time. Just maintain that heading distance time 15 miles to go and I'll leave it, we can turn.

Eng. It's just gone now.

Capt. OK that fine.

Copilot. That was fine.

Capt. 15 miles.

Eng. We're on heading.

Capt. I will set up 220 we're going to do an approach onto 03 left OK 220 and 202 OK let's just check that minimum equipment list please.

Eng. OK can you just put 275 on that standby ja.

Copilot. OK just putting that up.

Capt. OK, OK, minimum equipment list.

Eng. OK that's the end of the loss of both engine generators check list.

Capt. Can I go slightly non standard and ask you to make a list of what we've lost over here.

so that you can brief us.

Eng. This one, we just read and do.

Capt. Ja.

Eng. This bus equipment one. We don't have to make a list of this.

Capt. OK. Alright OK before we do this we just need to do a bit of navigation over here.

Copilot. OK Captain we should be passing shortly over Golf Alpha Victor.

Capt. Hotel Golf Victor.

Copilot. Hotel Golf Victor.

Capt. Yes.

Copilot. Um, this think normally stays on at about 350 so I'm gonna turn it slightly 10 seconds to the left, that should give us about 360 just about and try and intercept the localizer for that um. OK.

Eng. OK.

Capt. OK but I think we're going to go over Hotel Golf Victor direct to Juliet Sierra in order to enter the hold over Juliet Sierra.

Copilot. Direct to Juliet Sierra, OK not a problem.

Capt. We start our approach ETA plus 10 minutes to ETA plus 40 minutes. Are you happy with that? Do you agree with that?

Copilot. OK.

Capt. In fact at this stage, because of a low, low speed we can start the approach straight away. You buy that?

Copilot. Straight away OK.

Capt. Um, let me just see if I can get Hotel Golf Victor again here. The needle is moving on this RMI OK it's 35 to Hotel Golf Victor.

Copilot. OK.

Capt. So that indication is looking good - you agree with me? Yes Captain OK

Capt. OK this is hang of confusing hey? OK.

Eng. Ja just remember we've lost all compass.

Copilot. OK.

Capt. Ja, that's fine, Hotel Golf Victor is coding, I just want to check the coding on Juliet Sierra. No coding, ADF's have gone.

Copilot. Thank you. So we can't go to Juliet Sierra.

Copilot. So we can't go to Juliet Sierra.

Capt. So we want to pick up.

Copilot. If we've got the VOR's then let's try and pick the VOR ROM 1152.

Capt. Absolutely, absolutely.

Eng. VOR number 1 you should have.

Capt. OK let's.

Copilot. OK.

Eng. VOR number 2 is lost.

Copilot. OK thanks.

Capt. I'll take that and then as soon as I've done that uh, that's beautiful coding checks, I'll go 031 intercept the ... localizer. I think it's probably best. Intercept the localizer for Juliet Sierra Victor.

Copilot. Thanks Captain Affirm.

Capt. Um what does this say?

Eng. Just watch the speed at 275.

Capt. 275 I've got a heading flag here. You can't even trust this, hey. We want a heading of 350 now.

Copilot. Thank you.

Capt. 350 that's, that's why we're not intercepting.

Copilot. OK thanks.

Capt. Let's make it about 340 set make a positive intercept do you agree with that?

Copilot. Alright Captain.

Capt. OK 340.

Copilot. 40.

Capt. And uh, you're using the standby - That's looking good, OK let's go

Eng. OK we've lost, platform. All platforms lost.

Capt. Yes.

Eng. Compass all lost apart from standby.

Capt. All lost OK standby.

Eng. VOR ILS number 2 lost so we should be using 1.

Capt. OK we're using one we have coding on 1 that's all we've got.

Eng. OK ADF total loss.

Capt. Both lost.

Eng. Air data computer No. 1 but of course we've lost the uh, um gee wiz how come?

Capt. No, we have ATC 1 that's fine we have ATC 1.

Eng. OK we have deadright confirmed. Flaps and slats we've lost indication. So we have to go back and check the sections.

Capt. OK alright.

Eng. We'll the first few selections anyway.

Capt. Yes.

Eng. Rudder travel pitch fuel we're total loss We know about that.

Capt. Yes.

Eng. Rudder travel and...

Capt. You can switch them off right now. Let's set up ah.

Copilot. Can I just request, one request , Holding pattern Juliet Sierra Victor, do you have any plan with that?

Capt. Uh, Juliet Sierra Victor that's a good one, let's use the same one.

Copilot. OK the same one right hand patterns Juliet Sierra Victor. Thank you.

Capt. OK.
 Eng. Pitch trim lost, we know about that.
 Capt. Yip.
 Eng. They both out we know about that.
 Capt. Yip.
 Eng. Auto pilot flight directors both lost.
 Capt. Yes.
 Eng. Yaw damper - both lost.
 Capt. Yes.
 Eng. Auto throttle systems lost.
 Capt. Yes.
 Eng. ADC No. 2 is lost we should have No. 1 we still haven't got comms.
 Capt. That checks.
 Copilot. Captain I'm having the field in sight, looks like the field in sight there.
 Capt. Great OK intercept the localizer and uh do a hold. We can go outbound on JSV perhaps just one.
 Copilot. OK.
 Capt. And we'll have to do a screaming descent from 20 000 down to 8 000 and try and do it. Try and get on the ground as quickly as possible after that. There is an element of urgency here. OK lets go.
 Eng. VHF number 2 lost.
 Capt. Yes. OK brake pressure indication is lost. Yes.
 Eng. We still have green though.
 Capt. Yes.
 Eng. No problem with hydraulics.
 Capt. You have normal hydraulic indications though that might be duff there.
 Eng. That's duff frozen.
 Capt. That's fine. Let's bring the speed back.
 Copilot. Thanks 250.
 Capt. 250 in fact 240 OK just use that as a reference Let's go.
 Eng. Nose wheel steering loss.
 Capt. Yes.
 Eng. So we'll have to stop on the runway.
 Capt. You got the field in sight.
 Copilot. Yes just coming.
 Capt. OK Localizer alive, go for it.
 Eng. OK Nose wheel steering lost.
 Capt. Yes.
 Eng. And we got no comms to get them.
 Capt. Yes.

Eng. Ignition A lost and have A and B.

Capt. We have A and B selected. OK.

Eng. Tanks 1A lost OK the pumps lost but we have lost all of them in any case.

Capt. Perfect. Yes we still on gravity feel we want to avoid sharp a....

Eng. And of course the pressure system to auto depress is lost that is the ground aux is lost.

Capt. OK we are going to do quite a high descent now do you... is there anything we can do about that?

Eng. Uh, ja well fortunately, because we are coming into Jo'burg at 5½ there is no real problem for that.

Capt. Alright.

(Captain speaks to passengers.)

Capt. OK the indications are very good on this HSI now for JSV.

Copilot. OK I see that.

Capt. And as soon as you get beacon passage with the flaps just turn outbound.

Copilot. Turn outbound OK.

Capt. OK alright that completes that.

Eng. Min equip checklist completed.

Capt. Did we get right to the bottom of the dual generator failure checklist?

Eng. Yes.

Capt. We read the time advisory on the batteries.

Eng. It just covers one generator recovered.

Capt. OK right.

Eng. Yes.

Capt. Shall we work out speeds for the landing?

Eng. Yes.

Capt. Speeds descent and approach checklist and then we land, Then there are no speed corrections for this.

Eng. Negative.

Capt. On this landing, hell it's very confusing flying without a bug hey.

Copilot. Ja. No I actually find. Standby I'm using the one on the standby.

Capt. That's perfect alright. Shall we bring the speed back?

Copilot. OK shall I bring it back to 240 now?

Capt. OK back to 220 initially.

Copilot. OK thank you.

Capt. OK.

Eng. 220 on the standby please.

Capt. 220 yes that's fine and have you got what are you working on?

Eng. 124 tons hey.

Capt. OK that sounds good having burnt you are working on burning about 5½ tons 124.

Eng. Ja.

Capt. Let's go for it just let's read that anyway.
 Eng. OK it's Johannesburg 03 right 25 flaps 25 slats for a weight of 124 tons VFTO is 215.
 Capt. 215.
 Copilot. 215 thanks.
 Eng. V4 186.
 Capt. 186.
 Copilot. 186.
 Eng. V3 149.
 Capt. V3 149.
 Copilot. 149.
 Eng. Bug at 132.
 Capt. 32.
 Copilot. 32 thank you.
 Eng. And I've got 7 1 for Durban here but of course we going to.
 Capt. We coming in here.
 Eng. In Jo'burg.
 Capt. Alright you happy to start the approach almost immediately now.
 Copilot. Immediately Captain OK fine.
 Capt. OK because we are ETA plus 10 at least now. OK beacon passage.
 Copilot. OK.
 Capt. Let's turn right outbound onto a heading of uh.211 descent approach checklist please.
 Eng. Coming up I can't do anything about the lighting that's emergency lighting on.
 Capt. OK and I think we can start descent as well please.
 Copilot. OK.
 Capt. Let's go down to 8000 feet.
 Copilot. Roger.
 Capt. Thrust right off 8000 ft QNH 1020 set.
 Copilot. 1020.
 Capt. Your side for what it's worth.
 Copilot. Yes.
 Capt. I've got good altitude indications here.
 Copilot. Thank you.
 Capt. My G flag has gone hey - I mean my ADI has gone so it's totally visual situation except for this instrument. OK descent approach please.
 Copilot. OK.
 Eng. OK are we going to set up the go around on the N1 manually?
 Capt. Yip.
 Eng. It's 112.
 Capt. 112.
 Eng. Five.

Capt. And we'll clean up let's clean up the panel first and then we can get it away 112 give.

Eng. OK.

Capt. OK. Right I've got 12 tons of fuel which makes reasonable sense - actually no.

Eng. Five.

Capt. 12 tons eighty - yes that's about right that's about right so perhaps we can trust that. 122 tons for landing we are working on?

Eng. 124.

Capt. 124 that's fine ja. OK recall I've got a master warning system fault, let's not worry about that in other words this panel is probably useless.

Eng. OK.

Copilot. Ja.

Capt. Electrics.

Eng. We know about the generators.

Capt. OK probe.

Eng. Probes we've lost.

Capt. Whole bunch. We're CAVOK. We don't have to worry about them.

Eng. Window heat we've lost.

Capt. Ja ads number 1.

Eng. Number 2 yes.

Capt. Flag instruments - the whole panel. Platform.

Eng. We've lost all.

Capt. All pitch trim.

Eng. Pitch trim we have lost as well as your damper.

Capt. It's manual pitch trim hey.

Eng. Ja.

Capt. You are flying it on manual pitch trim.

Copilot. OK I'm flying manual pitch trim.

Capt. OK your damper that will stay off, that's off, that's off. We've got nothing on this aeroplane.

Eng. OK descent approach checklist is runway turn off lights.

Capt. OK can I fly it and you can interact with now.

Copilot. Right thanks you've got control Captain? Just give it another 10 seconds and you should be on the outbound heading.

Capt. OK if you could complete the descent approach checklist please.

Copilot. OK thanks descent approach checklist coming. You're already done the recall.

Eng. Yes we've done that.

Copilot. That you're done OK thanks. Let's carry on with those, straight out Captain.

Eng. OK straight out, are you happy that that's the heading bey?

Copilot. OK I'll just give you a correction just now.

Capt. OK thanks.

Copilot. I did a time turn should we should be coming.

Eng. OK runway turnoff lights selected on, Logo lights on, Cabin signs?

Copilot. On.

Eng. Landing data?

Copilot. OK is checked and set.

Eng. Radio altimeters not applicable.

Copilot. OK not applicable.

Eng. N1 limit computer we've set up.

Copilot. We've set up the go around manually.

Eng. Thanks, Master warning.

Copilot. OK it was recalled and we've cancelled the lights and unnecessary.

Eng. Circuit breakers are checked fuel is set for landing. That's tank uh, gravity feed. Tank to engine.

Copilot. OK.

Eng. Pressurization is set.

Copilot. Radio nav instruments. That's Juliet Sierra set once twice that's all we've got for...

Eng. OK.

Copilot. Indications.

Capt. Could I just interrupt for a second. Should we select 8 flap uh 16 Slats please? I'm below 250 knots here.

Copilot. OK below 250.

Capt. Confirm here.

Copilot. Checks selecting.

Capt. Just set it does pitch.

Eng. Yes ah.

Capt. With the pitch field off it's ja OK does pitch.... ja.

Eng. OK I'm just worried. I'll go back and have a look now.

Capt. OK if you would please... that's fine and V4 Go V4 selecting.

Capt. V4 selecting. 186.

Copilot. 186.

Capt. And on here as well please.

Copilot. Right set.

Eng. OK altimeters.

Copilot. OK set 1020 set cross checked twice.

Capt. Please select the gear down so we can go down a bit quicker.

Copilot. OK checks selecting.

Eng. OK there's no indications at the back, because we've lost the power there. That's the descent approach checklist completed. I'm ...

Capt. Great.

Eng. I'm just going back to check the uh, ...

Capt. I tell you what let's make a flap selection and then we can uh...

Copilot. Down 3 greens.

Capt. Then we can check that as well.

Eng. OK.

Copilot. OK selecting 8 flaps.

Capt. And your arms by any change live there.

Eng. Negative captain.

Capt. Right it would be OK I'll be with you in a sec I just want to get the speed break back OK 8 flap please.

Copilot. Selecting.

Eng. And a pitch change coming here.

Capt. Ja definitely a pitch change there that's fine.

Eng. I'm just going back.

Capt. You might as well wait for 15 if you're happy with that.

Eng. Ja then at least we know we're safe.

Capt. OK 15 flap now please.

Copilot. Speed checks selecting OK I'll give you V3.

Capt. V3 plus 10 Geez there's a pitch change if you could check that please.

Eng. I'm just going back quickly.

Copilot. V3 plus 10 you have, Captain.

Capt. OK thanks.

Copilot. Gear down 3 greens.

Capt. We've been outbound for about 3 minutes now.

Copilot. OK.

Capt. Perhaps another minute, we'll turn inbound along final approach.

Copilot. OK along final approach right Captain.

Capt. We got 031 and Juliet Sierra Victor this side.

Copilot. OK I'm just going to set it up here 031 and 031 set and Juliet Sierra Victor is checked set and identified.

Capt. Thanks we've got a pneumatic on the master warning 5 that's new I don't know if uh...

Eng. We've lost pressure there, as you open the motors it kicks in again.

Capt. OK.

Copilot. OK.

Capt. Right what do you feel about a turn in now 12 000?

Copilot. OK Captain OK go for the turn.

Capt. Do you reckon? OK turn me on a heading of 350.

Copilot. 350.

Capt. Give us a shout when you see the field please.

Copilot. Alright Captain will call.

Eng. OK we've got no air pressure from the motors so I've just opened the RAM air inlet.

Capt. OK.

Eng. This VRO indication worries me here a little bit here it's indicating 010.

Copilot. 010 OK that's... that's down so we should be looking for about 350 it's 30 degrees intercept well or are you going to give slightly wider intercept.

Capt. No that's actually that's fine about 3 what did we say 34 350.

Copilot. Runway coming in sight Captain.

Capt. Cabin pressure shall I keep turning?

Copilot. Keep turning.

Capt. OK that's fine what is the story there?

Copilot. Maintain, maintain, maintain that heading now Captain.

Capt. OK that's fine.

Capt. Say again.

Eng. We lost the pacs there and I opened the RAM air inlet and of course the cabin's just come up 92 that's why we coming up to 10 000.

Copilot. 2000 feet to go Captain.

Capt. Thank you I'm standing by for your call to turn in bound. I can't see the airfield.

Copilot. OK.

Eng. And the flaps 0h sorry 168 we have at the back.

Capt. 16.8 or 15?

Eng. 1650 correction ja.

Capt. OK I'm waiting for your call to turn in.

Copilot. OK standby Captain.

Capt. Uh in fact give us the ILS that's a good idea.

Copilot. OK lets try that 1103.

Capt. And we can check the coding there as well.

Eng. I'll check it.

Capt. And descent approach is completed, hey?

Copilot. Descent approach affirm is completed.

Capt. And the coding checks your side.

Copilot. Thanks.

Capt. No brake pressure indication here so I'm just going to do normal braking here. It's a long runway, it should be no problem.

Eng. Ja and we do have green pressure.

Capt. Thanks how's the?...

Copilot. Captain I'd say start turning about 10 degrees more.

Capt. OK.

Capt. And 700 feet to go, hey.

Copilot. Right. Hold that heading now Captain.

Capt. OK let's check these engines just to make sure we've got some thrust here.OK looks good.

Copilot. OK you got the runway in sight?

Capt. Ja I've got the runway in sight thanks then...

Copilot. 500 feet 8000.

Capt. Thank you Uh, coding check on the ILS.

Copilot. OK.

Capt. Confirm.

Copilot. Checks.

Capt. Thanks OK are you happy that everything's done, the landing gears down?

Copilot. Gears down.

Capt. And just if we could do the landing checklist just up to flaps please.

Copilot. OK landing checklist up to flaps.

Eng. Landing checklist says anti-skid is 8 release. Altimeters.

Copilot. Altimeters set and cross checked.

Eng. Landing gear.

Copilot. Is down 3 green?

Eng. OK we have none at the back because of the electrical problem. Auto brakes.

Copilot. Auto brake Captain do you want any?

Capt. No. thanks no I don't think so, how's the turning?

Copilot. OK you can start turning in now. Have you got it in sight?

Capt. I've got it now thanks.

Eng. Ground spoilers.

Copilot. Groundspoilers are armed.

Eng. That's to the line.

Copilot. Thank you.

Capt. Alright we're going stop on the runway hey?

Copilot. Yes.

Capt. Just keep a look out for traffic that's the big thing. I think they're keeping everything clear. I don't see anything but we are lost communications.

Copilot. Roger for what it's worth.

Capt. It's interesting. We haven't even had time to check on the ..if yet

Copilot. OK I did try on HF on 8933 and no recomms.

Capt. OK great thanks very much I've got a glide slope flag here, oh hang on I'll tell you what this is probably working here the HSI is probably working.
just keep your eyes open for traffic.

Eng. Will do.

Capt. And we don't know what the wind is on the ground I assume that it is from the North.

Copilot. Roger.

Eng. The forecast was 020 at 5.

Capt. Even the seat drive doesn't work.

Eng. Nothing works.

Capt. Ja so the pitch feel is very strange hey?

Copilot. Glide slope is coming in there Captain.

Capt. Thank you.
 Copilot. And we can go visual.
 Capt. And speed to V3 please.
 Copilot. V3 selecting.
 Capt. And on that bug as well please.
 Copilot. 149 and...
 Capt. Just want a speed check on my ASI my ASI says 155 156
 Copilot. OK 156 and we've got 156 your speed checks.
 Capt. Thank you OK you're standing by 25 flap.
 Copilot. Roger.
 Capt. Intact.
 Copilot. Coming up the slope now Captain.
 Capt. In fact 25 flap now please.
 Copilot. Speed checks.
 Capt. If you could go back quickly we've got a gear warning.
 Copilot. Gear warning.
 Capt. Confirm gear is down?
 Copilot. Gear is down this indication is 3 greens here Captain.
 Capt. OK there was nothing on the checklist to ask us to disable GWPs.
 Capt. No.
 Copilot. No.
 Capt. OK just cancel that.
 Copilot. OK.
 Capt. It's not cancellable hey?
 Eng. How did you cancel that?
 Copilot. I cancel on the...
 Eng. Master.
 Copilot. Master.
 Capt. OK could you check on the flap setting please?
 Eng. OK will do.
 Copilot. OK check your speed slightly below.
 Capt. Thanks.
 Copilot. You want the bug now Captain.
 Capt. Yes please.
 Copilot. Any corrections?
 Capt. Ah yes plus 5 is fine.
 Copilot. OK give you 137
 Capt. Just in case of a wind change hey 137 thanks I'm going below slope hey?
 Copilot. Right Captain.
 Capt. I mean I'll correct for it now it's not intentional.

Eng. Captain you have 25 flaps.

Capt. Great you're happy?

Eng. Yes.

Copilot. I'll just talk to the cabin.

Capt. Alright you're happy?

Copilot. I'm happy Captain. Do you want me to tell them?

Capt. I spoke to the passengers, I don't think there's a problem. I told them I just warned them that we'll stop on the runway OK.

Copilot. OK Captain.

Capt. If we have to go around I'll just do a left visual but at this stage go around is not a good idea. Time-wise we must have about 10 minutes to go before a total electrical failure. Do you agree with that?

Copilot. Affirm.

Eng. Ja there's not much time left there's 28 about

Capt. 15 minutes, 15 minutes OK well perhaps one circuit one quick circuit It's a very different aeroplane hey without pitch feel and no stab trim.

Eng. I won't be able to give you very good height calls at all.

Capt. Ja OK ja thanks OK visual call outs.

Copilot. OK visual call outs coming up 500 feet in the slot.

Capt. Thank you.

Eng. 100 feet. 50 feet. OK.

Copilot. OK 80 knots 60.

Capt. OK let's check for there is definitely no nose wheel steering. We've been using aerodynamic control. I'm stopping right here.

Copilot. OK Captain.

Capt. They'll have to use 3 right. Right gents I just want to get a little bit clear of 34 here, get clear of 34, they can use 34 and 03 right.

Copilot. Well flown there Captain.

Capt. Thanks, thanks for the help gents. That was quite an interesting exercise.

Transcript Crew D

Capt. OK you have control?

Copilot. I have control

Capt. It's your aeroplane, and what are we? Springbok OK 239. Ground Springbok 239 request taxi.

ATC Springbok 239 taxi holding runways 03 right

Capt. Holding runway 03 right confirm

ATC My apologies, runway 03 left.

Capt. Runway 03 left, Springbok 239. OK clear my side

Copilot. Clear my side

Capt. OK

Copilot. OK Brakes off.

- Capt. OK I'm going to switch this off for us.

Copilot. Thanks Captain.

Capt. And just tell me if you're happy with the background lighting. Is that OK?

Copilot. Ja it's fine Captain Oh, that's fine. Can I have flap too please Captain 10. Thank you

Capt. Selected.

Copilot. And the before takeoff checklist please.

Capt. Okiedoks, I'm just standby on the flaps

Copilot. Standby

Capt. While the flaps are running if you would like to review the departure so long.

Copilot. Alright Captain, the the departure Captain, is uh Rhino 2 Alpha departure.

Capt. OK, let's start with the ah, engine failure - The engine failure procedure RTO in other words.

Copilot. The RTO procedure says this will be a goal orientated takeoff. From 100 knots, this will be a goal orientated takeoff, in the event of a decision to stop before V1, which is 129 knots will apply full brakes and close thrust levers. Disengage auto throttle and raise speed brake manually and apply full reverse thrust on symmetrical engines. If you could please help me there.

Capt. Alright.

Copilot. Thanks.

Capt. OK, noise abatement.

Copilot. Noise abatement is...

Capt. OK I'll help you there.

Copilot. Thanks Captain.

Capt. Noise abatement states that at 7000 feet we'll ask for climb thrust and then continue at V2 plus 10 until 8500 feet, we'll ask for climb thrust and then continue at V2 plus 10 until 8500 feet and then accelerate and clean up the aeroplane.

Copilot. Affirm Captain.

Copilot. OK, Rhino to Alpha.

Copilot. Rhino to Alpha says eh, off runway 03 left, 1800 climb straight ahead to 5.5 DME on Juliet Sierra Victor which we've got set twice. And then turn right direct to November Lima NDB which we've got set twice as well. And to climb to uh, flight level 90, which we've got on the

window.

Capt. Checked

Copilot. And further climb will be under radar control.

Capt. OK - OK, 90 clear flight level 130 and at level 130 we'll set courses for flight plan. OK have you got 10? 10 on the green light. Ready for controls to the left, left aileron and spoiler up, right aileron down, neutral, to the right, right aileron, spoiler up, left aileron down, neutral, stick back, elevators up full deflection, neutral, stick forward, elevators down, full deflection. And neutral. Rudders to the left.

Copilot. Your rudders Captain.

Capt. OK keep your feet on the rudders, so you can feel that you get full deflection.

Copilot. OK

- Capt. OK, that's full left and zero and to the right full right and zero. And can you comfortably reach the full

Copilot. Yes. Captain.

Capt. Control check completed, speed for runway 03 left, 129 146 186 and a safe pitch of 15 degrees, that's about there, flaps 10 required, 10 we have.

Copilot. Affirmative.

Capt. time is zilch and we're looking at 2 1/4 units, switch set light is out and thanks for the before takeoff checklist. Please check.

Eng. (engineer - checklist). That is alive.

Copilot. No flex

Capt. 1010 green light. Checked. 2 1/4 miles and 3/4 set light out. Checked in the front. Thank you sir.

Cabin crew one minute to take off, to your stations please. Ground Springbok 239 approaching the first hold ready for departure.

ATC Springbok 239 to ... 118,1 please. (Frequency change)

Capt. 118,1 Springbok 239. Ta. Good morning, this is Springbok 239, ready for departure 3 left.

ATC Springbok 239 line up and wait.

Capt. Line up and wait. Springbok 239. Confirm the departure frequencies.

ATC It's going to be 1245.

Capt. 1245 Thank you.

Copilot. I've got this side Captain.

Capt. OK thanks. OK we're clear to line up and wait. I see the final approach clear.

Copilot. Clear my side.

Capt. And we'll do this and that.

Copilot. Just to confirm, Captain, this is the taxi-way? Sorry.

Capt. Jip, Ja you just follow the white line.

Copilot. Thanks

Capt. OK, that's that, that's that.

Copilot. Alright.

Capt. OK, before takeoff checklist up to body gear steering please. Alerted on set.

Copilot. I'm sorry Captain.

Capt. Go ahead - continue (checklist continues) OK standing by takeoff clearance. When you turn it.

Copilot. Yes Sir.

Capt. I'll tell you when, about now, start, bringing it to the left, slowly but slowly and then quicker quicker, OK turn it more and more now bit quicker bit faster in the turn. Keep on turning, keep on turning, move your hand right across now. OK now, no, no just do it slowly move it right across, now slowly bring the wheel back to the neutral very slowly. Till you get onto the centre line, just do it slowly gently.

Copilot. OK

Capt. And then you turn it to the right. Springbok 239 is ready for departure.

ATC Springbok 239 the surface wind is 130 and 3 knots. The visibility is decreasing and you are cleared for takeoff.

Capt. Clear for takeoff thank you. Springbok 239

Copilot. OK um.

Capt. OK um can I just ask you, OK disarming body gear steering, snag the simulator visual please.....

OK disarmed, obtained (engineer checklist).

Copilot. Obtained.

Capt. Thank you

Copilot. Thanks. Standby for takeoff.

Capt. Standing by.

Copilot. OK. Thanks and reduce thrust please. Thank you.

Capt. 80 knots.

Copilot. Thank you. Cross checked

Capt. V1 rotate 15 degrees.

Copilot. Thank you.

Capt. Positive climb

Copilot. Gear up please Captain

Capt. Gear up.

Copilot. And, indicated airspeed and

Capt. Indicated air speed.....

Copilot. Thanks.

Capt. I don't know if that bang was anything significant um, anything that could break temps maybe.

Copilot. Um

Capt. checks.... and we're looking for to turn to level, 80 you can start levelling off and this radar. This is Springbok 239 approaching 9000 correction 90.

ATC Springbok 239 Climb level 130.

Capt. We're cleared level 130.

Copilot. 130.

Capt. Springbok 239.

Copilot. Sorry, I've got one, thank you. OK and turn me right please to new level.

Capt.95 about and 1013. (*setting standard altimeters*)

Copilot. 1013.

Capt. And we can accelerate anytime you like.

Copilot. OK thanks, right OK and give me, OK can I start with the flap Captain?

Capt. OK should we give you vertical speed?

Copilot. Vertical speed and 1500 feet please Captain.

Capt. 1500 right. Coming up 1000 feet to level off.

Copilot. Thank you.

Capt. green.

ATC Springbok 239 clear level 290 and go 128,3.

Capt. Level 290, 128.3, Springbok 239.

Copilot.

Capt. And at flight level 130 we can set course as per flight plan.

Copilot. OK fine sir.

Capt. So go direct to ... on Alpha.

Copilot. Aha hm..

Capt. OK, so I'll give you INS mode, thank you.

Copilot. Thanks Captain.

Capt. And you can just follow your whatshisname.

Copilot. OK, give me 1500 feet Captain on your vertical count speed please.

Capt. OK, vertical speed once again 1200 feet.

Copilot. Thanks Captain

Capt. It jumped out, because it captured just now, it captured the altitude. OK you can just follow that pitch bar, that's it.

Copilot. OK.

Capt. And I'll just reinsert for us.

Copilot. And flap 1 please Captain.

Capt. Flaps 5.

Copilot. On my gosh flap 5. And speed 2.2.

Capt. 206. 5-5 and the green light

Copilot. Thanks Captain, just wait for the speed. Flap 1 Captain.

Capt. Flap 1 selected.

Copilot. And speed 226 sir,

Capt. 226. Flaps are running

Copilot. Thanks.

Copilot. Area Springbok 239 passing level 162, good morning.

ATC Morning to you radar identified.

Capt. Springbok 239. Nav green. ICU with Alts are armed.
 Copilot. Thanks. and flap up please Captain.
 Capt. OK flaps up.
 Copilot. and speed ahh....
 Capt. 297
 Copilot. 297 yes thanks.
 Capt. OK 297. Flaps up and the lights are out. And if you're happy you can unstrap them.
 Copilot. Ah, sorry.
 Capt. You can unstrap the pacs.
 Copilot. Oh, ja please.
 Capt. On the weather or anything, off.
 Copilot. And uh, and after takeoff checklist..... Thanks.
 Capt. Thank you. Springbok Jo'burg Good morning. This is Springbok 239 airborne at ah, 15 and we'll be in Durban on schedule at uh 1015. Thank you very much.
 ATC Springbok 239 and uh, goodday to you. Bye now.
 Copilot. Captain, may I use the autopilot please sir?
 Capt. Sure thing. OK. OK we're still climbing up.... on
 Capt. OK now, first thing you want to do is go to PMS
 Copilot. PMS yes
 Capt. Or sorry, indicate it first PMS that's it. OK altitude selectors off and now for the auto throttle.
 Copilot. Off yes.
 Capt. That's it
 Copilot. Thanks Captain.
 Capt. Right, well done.
 Copilot. Um.... Alpha
 Capt. Victor Delta. (engineer speaks)
 Capt. OK let's have a look at the weight here quickly. OK 200
 Copilot. 206
 Capt. Can you see it there, otherwise I might have it here uh.
 Copilot. 292.
 Capt. 124, 125, 125, 165, 205.
 Copilot. Thanks Captain.
 (Engineer speaks)
 Copilot. 330, 330, 205
 Capt. Um, airborne about.
 Copilot.
 Capt. 19, 0919 for airborne to 933, 937, 953
 Copilot. uh,uh,uh
 Capt. 8 minutes. Yo!
 Steward (Heart attack)

Capt. Thank you. OK he's not well. And we don't have a doctor on board or a nurse, or any medical staff? OK, could you find out the latest weather in Jo'burg please.

Copilot. In Johannesburg, OK

Capt. So you'll just speak to Jo'burg and um, in fact let me do that. Gents I don't know how you feel but it seems like we've got a problem here, there's no medical person on board. And we must get this guy on the ground asap. So if the weather allows it we go back to Smuts, otherwise the quickest is probably going to be a high speed cruise to Durban. If there's anything you can think of in the meantime. Give it some thought.

Copilot. OK

Capt. I'll just call ATC. Johannesburg area this is Springbok 239. We might have a problem and there is a possibility of returning to your field can we have your actual latest weather conditions, plus any significant trend please.

ATC Standby please. Springbok 239 ready to copy

Capt. Go ahead.

ATC Roger the surface wind 140/5 knots. Visibility between 2 and 300 meters. Zero vertical visibility. The QNH is 1029 and nosig. (*no significant change*) This weather seems to be coming in waves, and in and out between 2 and 300 feet visibility.

Capt. 2 and 300 meters, thank you. OK we need for CAT we can't do CAT 3. We, it's 300 meters, it's 2 and 300 meters it's below CAT 2. We can't go to Waterkloof. Um, can you confirm that conditions at Waterkloof are roughly the same please.

ATC That is affirm.

Capt. OK from our present position we would like a direct track to the Delta November Victor, and if you could also when you speak to Durban ask them for priority clearance into Durbs. And if also possible we'd like the latest weather for Durbs if you could supply us with that.

ATC Roger, approved

Copilot. Um.... maybe Bloemfontein. How is Bloemfontein Captain in terms of time-wise, are we not closer to Bloemfontein from here.

Capt. Uh, we can quickly stick in let me see, you can put in Bloemfontein on the NAV aid, um go to No. 97 and just put in Bloemfontein.

Copilot. Coordinates.

Capt. Coordinates and frequency then we can have a look at that.

Copilot. OK fine Captain.

Capt. And confirm we are cleared direct to the Delta November Victor.

ATC Direct Delta November Victor and we have the weather. It is CAVOK there, visibility 10 Km plus.

Capt. Any runway news?

ATC Ah, the surface wind is 1405 knots, any runway you like.

Capt. Great, thanks very much and we'd like to put runway 23 on request then.

ATC Roger copy could you confirm the problem?

Capt. Yes, we have a passenger that's uh particularly ill, and needing very very urgent medical

attention.

ATC Roger are you happy with level 290?

Capt. 290's fine and if it's possible for you to just assist us in requesting Durban for an ambulance, or even a helicopter to be on standby please.

ATC Roger standby

Capt. Is it not on the?

Copilot. Not on mine Captain. I'm just going to get it from.

Capt. Bloemfontein

Copilot. Bloemfontein, OK I've got it here Captain.

(Engineer)

Capt. Man I do, I actually think Bloemfontein at this point is probably going to be roughly....

Copilot. OK I've got the coordinates. It's South 28

Capt. OK let's, what's the frequency? 114?

Copilot. OK the frequency is 1141 Captain.

Capt. 1141. Insert Oh, 140 insert South.

Copilot. OK South is 2906

Capt. 06

Copilot. And East is 261

Capt. Is that 29060 or 2906

Copilot. 29060 Captain.

Capt. Right.

Copilot. And East is 26181

Capt. 6181

Copilot. and 1

Capt. 1, OK. 2618 OK, let's try again, East? 26181.

Copilot. Yes Captain.

Capt. OK, 185 OK and Durban at this stage, 98, Durban is 11250 and South, if you could get Durban's coordinates. In fact here we are 29582, 29582 East uh, 30571, 30571. 195. It's about 10 miles difference. Most of the pacs are going there and uh, I think that's probably our best bet.

(To engineer) Yea OK let's go for a manual cruise point 84.

Eng OK. Alright, I've inserted manual cruise mach point 8.4, so that we can get there as quickly as possible.

Copilot. OK Captain

Capt. You can work out your descent. We're gonna.... I'm gonna request a high speed descent with no speed restrictions, with a straight in ILS runway 23, so we'll end up on a right base no doubt.

Copilot. OK Captain. I have got the new headings for...

Capt. Thanks, and let's just see, Durban is 1 point no Alpha 150 we'll insert direct 2-4 Alpha insert. And it's not a big heading change I don't think. Springbok 239, Victor Delta, climb level 290.

ATC Thank you very much. You're clear direct to Delta November Victor flight level 290 high speed all the way. Uh at Durban there will be a helicopter from the airforce waiting to take the

passenger to Addington hospital. They're expecting you, priority landing.

Capt. Thank you very much Springbok 239.

Copilot. OK Captain.....102 miles sir.

Capt. 102 miles.

Copilot. Yes, from Delta November Victor.

Capt. OK let's give you Delta November Vic, your side it should be a 179 miles. And I'll take it on my side 1125. I put in a mach point 855 cruise.

Copilot. 55 cruise

Capt. What do you want to do now?

Copilot. Sir I must put in.

Capt. No, no it's already there. I say I've put it in.

- Copilot. OK sorry.

Capt. OK, so if you want to, you can just stick in your descent.

Copilot. OK, ah.

Capt. Or do you want to do a manual descent?

Copilot. I'd like to do a manual, ja I'd like to fly it manually.

Capt. Manual

Copilot. Manually Captain please sir.

Capt. No problem, 102 miles for the descent.

Copilot. Affirmative Sir

Capt. 29 000 feet. Have you got it, OK in fact it won't be there 1199.

Copilot. (singing)

Capt. Let's speak to the chaps on VHF. I'm just off VHF 1 for the moment.

Copilot. OK Sir, OK I'll just listen out.

Capt. Durban area, this is Springbok 239 good morning.

ATC Springbok 239 go ahead.

Capt. the Jo'burg control standing by your latest surface data please.

ATC OK the surface wind in Durban is 140 at less than 5 knots. CAVOK, the temperature 18, QNH 1020.

Capt. Copies 1405 in that case runway 23 please and QNH 1020 and confirm nosig.

ATC Nosig.

Capt. OK I'm back on air, the weather in Durban is fine.

Copilot. Ja.

Capt. It's CAVOK, we can plan on runway 23 temperature 18 degrees and the QNH 1020. Thanks Captain.

Copilot. Runway 02 and the inbound.... outbound....

Capt. (to cabin) OK I'm just off the air again.

Copilot. OK.

Capt. Durban traffic this is Springbok 239, good morning.

ATC 239 Go ahead. Passenger on board the flight, um, we would like to deplane him first and as

quickly as possible, there is a military helicopter, I would assume it's a Puma, waiting to take this person to Addington hospital, could you please assist us with a stretcher to have it ready as soon as possible and to board the aeroplane first of all in fact if you could standby a second I can tell you where this person is sitting.

ATC OK will do.

Capt. OK, they tell me he's sitting in economy class or whatever. OK this passenger is sitting in 40 Bravo economy class. We are going to keep all the other passengers seated until you can deplane this passenger, so you come on board as the doors open, with your stretcher.

ATC OK Captain, we'll get that all organized.

Capt. Thank you.

Copilot. OK, Captain we're ready sir, um, I'll give you the chart.

Capt. OK.

Copilot. OK it's Durban, Louis Botha runway 23 Captain and the frequency is 110.3 sir.

Capt. OK.

Copilot.The initial approach altitude is 2000 feet Captain, and we'll intercept the localizer at 2000 feet and ... the uh, frequency is Delta November 310, which is the outer marker and descent now to a height of 225 feet.

Capt. OK 225.

Copilot. 225.

Capt. And then I see the outer marker crossing altitude is um, 1296.

Copilot. Yes, 1296.

Capt. OK, so one bug at uh, 296.

Copilot. Single bug at 296.

Copilot. OK, OK where the hell is that? 96 Oh.

Capt. OK just move the bottom bug to 296 and leave the other single bug on 225 no 296. There's 200 feet, so just before 300.

Copilot. OK sorry sorry sorry sorry 200.

Capt. That's it OK And do you have another bug? That's it next to the other one, that's it.

Copilot. OK thank you Captain.

ATC Springbok 239 we'll continue with Durban 119,1

Capt. 119,1 for Durban now thank you bye bye. Durban good morning again. This is Springbok 239 Delta November Victor level 290 descending 20 miles.

ATC Roger Springbok 239 descent level 130.

Capt. Oops. Level 130 thank you Springbok 239. OK we'll get level 130 on the window. 130 set.

Copilot. Thank you Captain. OK so we intercept now 25 feet sir.

Capt. Checked set.

Copilot. And the missed approach checklist says. plan Bravo heading for 3000 feet then turn left and return to Delta November or as directed by ATC. OK.

Capt. OK.

Copilot. And in the event of a um... Captain... and select the go around thrust levers.

Capt. Go levers first, go levers first.

Copilot. yes-

Capt. Go levers first, go around thrust.

Copilot. Go around thrust and flap active. And we require flap

Capt. Positive climb, gear up.

Copilot. Sorry positive climb and gear up thanks Copilot. There's everything Captain.

Capt. OK fine we require we hopefully will not have to divert. Fuel required for Bloemfontein 114, Smuts 118, and uh, at this stage I'm sure that we'll just take that away for a moment. 16 So we're actually fat on fuel. - To engineer - 12 tons back to Joey's thank you OK. So we can hang around for 15 minutes if necessary OK 125 is the VRE.

Copilot. 125

- Capt. 165 and 205

Copilot. Yes, Sir.

Capt. 115 is the go-around EPR which is to come. 225 is set 2 times and we said it's for runway 23. 100 percent and any time you're ready you can It's going to be a high speed descent, so I think maybe what we can do is let's go down at 90 miles.

Copilot. 90 Miles.

Capt. We'll see how it goes are you happy with that?

Copilot. I'm happy with that yes sir.

Capt. That's it and this is my plate

Copilot. And if we have a Captain at Delta November, we'll be at direct....

Capt. Great stuff, thank you. Direct entry at 5000 feet. It says here if you read the small print here. Initial altitude 5000 or higher MSA

Copilot. OK, OK

Capt. There you go.

Copilot. I see that, ja. And the MSA for that area is now 5100 feet sir.

Capt. Champion, thank you. OK let's just hear how this oak is doing.

Cabin Right Captain, you're calling?

Capt. Yes please how's our passenger doing? ... (blah, blah, blah). I'm just off the air again, we actually need 70, 60 percent hey? (*refers to engines.*)

Copilot. Ja, about 25000 feet.

Capt. In fact we've already got 320, so that's it, we can pull the power off. OK you can just follow the pitch bar. Get the dot behind the cross, 130 we have ALT, ACl indicated air speed, OK I'm just going to speak to the passengers quickly.

Copilot. Fine, Captain.

Capt. Ladies and gentlemen..... OK, how are we doing, 22.66 looking good. You want to when you look at your height we're descending down to 2000 feet so whatever you read there subtract 2000 from it, multiply it by 3 plus 10 miles, and if that's what the DME reads, that means we are fine. So 2000 minus 2 is 18 times 3 is 54, 18 X 3 is 54 plus 10 is 64. 50 at 10 000 we should at least be at 64. We are at 64. So we're looking good.

Copilot. Captain I've got Delta November indicating and also coding.

Capt. Thanks very much, I actually checked it a bit earlier. Thank you very much. I will get up 235 for us on both sides which is the middle marker and the outer market selected.

Copilot. Can you give me 50 left please Captain, sir

Capt. 5 degrees left.

Copilot. Can I select direct Delta November.

Capt. At this stage we are cleared directly Delta November Victor.

Copilot. Delta November Victor OK

Capt. So when we get a bit closer he'll probably turn us left and then... 18 less 2 is 15 plus 10.

Copilot. plus 10. 55

Capt. plus 10 . 55. we're now at 58 we're looking good for the deceleration as well.

- ATC Springbok 239, at 50 miles descent 5000 feet QNH 1020

Capt. 50 miles 5000 feet on 1020 for Springbok 239 . Right at 50 miles, we're clear 5000 on QNH 1010, correction 1020.

Copilot.

Capt. And Springbok 239 confirm we are under radar control.

ATC From 50 miles you'll be under radar control.

Capt. Thank you.

Copilot. Thanks Captain. OK I can I have 500 feet.

Capt. Not yet, let's wait for 50 miles.

Copilot. OK

Capt. What I can do is I'll give you the inbound curve so that you can get an idea of ...

Copilot. Thanks.

Capt. of where we are 236 and 236. 800 to level off, there's 50 miles coming up and 5000 feet. And I'll give you indicated airspeed in moment. There we go indicated air speed ALT SEL 5000 1020. And is there any thing else I can do for you? While we're approaching the field?

Copilot. Um, just descent approach checklist please Captain.

Capt. Thank you descent approach. That's that, thanks descent approach please OK (engineer checklist.)

Do you want some auto brake or are you happy?

Copilot. um, medium please.

Capt. You want medium OK

Copilot. Yes, thanks.

Capt. Alright, medium autobrake, inboards on, bugs EPR's set or EPR's to come, thank you .. set.. Selcal is off... checked and has been cross checked bugs set OK standing by on that. Thanks 8700 feet now.

Copilot. OK, I've just OK thanks I've just...

Capt. On the high side? You think so 8000 minus 2 is 6 x 4 is 18.

Copilot. 18

Capt. plus 10 is 28

Copilot. 28

Capt. And we are at 38! So we are actually far, we're low! Do you see that, 50.

Copilot. The hindsight.

Capt. No, we are actually low, we are low on the profile we should have been for this distance, a little bit higher - Watch, what happens is we're actually lower than we should be.

Copilot. That's right but what I'm saying....

Capt. Oh, is that what you say.

Copilot.

Capt. Oh, OK our rate of descent is too high.

Copilot. Yes that's right.

Capt. ACC green now, what we can do is keep the speed up.

- Copilot. Keep the speed up.

Capt. Ja for about 5 miles or so and then start decelerating 800 feet.

ATC Springbok 239 from Durban, could you advise if you'd like to go VMC we have no report of other traffic in the area.

Capt. OK we're happy with the Victor Mike Charlie descent Springbok 239

ATC OK descent circuit altitude and uh, passing 3000 feet if you could call tower 118.7

Capt. Roger when passing circuit 18,7 when passing 3000 feet thank you Springbok 239 . OK we cleared 3000 feet, you've got ALT select. And I'll give you 3000 initially

Copilot. OK thanks Captain

Capt. 300 knots for the time being should be good.

Copilot. Thanks Captain

Capt. And um.... we'll just maintain 3000 till about 15 miles and then we'll go down.

Copilot. Alright.

Capt. When we get to about 15 miles I'll give you ILS your side with DMB hold. The man said we cleared for a visual descent, so I'm going to turn you left, onto a heading of about 150. 150. To take us just outside the visual marker 145 ALT cell green.

Copilot. OK thanks, do you want me to maintain 500 knots, Captain until about...

Capt. Ja, in fact I'm going to wind us down to 2000 feet with ALT SEL. And I'll just give you... 1000 to level off.

Copilot. Thanks Captain

Copilot. Louis tower, this is Springbok 239 morning, passing 3000 for circuit 23 miles.

ATC Springbok 239. call finals, the surface wind is almost calm.

Capt. Finals thanks, Springbok 239. And ALT cell green 500 to level off. (beeper) OK don't worry. OK we'll maintain this until about 15 miles, and then you can decelerate. I'm going to turn you a little bit further left about so, so we don't cramp ourselves. When you get to 15 miles you can close power completely.

Copilot. Aye Captain.

Capt. And we'll maintain 2000 feet. OK coming up 15 can I give you ILS your side.

Copilot. ILS

Capt. OK, 1103 Take ILS on my side. And we can complete descent approach please.
(checklist)

Copilot. Power now Captain

Capt. OK you can go to uh, B fly ... computer on your side and then they are set fly... computer B that it?

Copilot. OK.

Capt. OK you can take power right off maintain 2000 feet. Thanks I think... and I will give you 206 knots. And at 10 miles I'll give you 1560 feet in the window.

Copilot. Thanks. OK can I have flap 1.

Capt. Flap 1 selected.

Copilot. And speed 186 sir.

Capt. OK flaps 1 206 is your speed. Flaps are running. OK it will be flaps 5, 186. OK flaps 1 you have.

Copilot. Thanks Captain.

Capt. OK, 1500 feet, in the window, and we can go down if you like and I'll give you indicated airspeed and ALT SEL.

Copilot. Captain, can I ask you a question - what is the speed.

Capt. You can, ja, if you want to you can. It's not a problem 200 ft to level.

Copilot. Thanks Captain.

Capt. I'm going to turn you right a little to cut the corner.

Copilot. OK.

Capt. Now at 170. And we have been cleared for the approach so can I give you ILS.

Copilot. ILS.

Capt. ILS you got

Copilot. Thanks

Capt. Flaps 5

Copilot. And flap 5, and speed 185.

Capt. 185, 186. OK

Copilot.

Capt. Ja apparently he's holding on. Check speed a little more power. Flaps 5-5 with the green light.

Copilot. Give me flap 10

Capt. 10 selected.

Copilot. And 166.

Capt. 166. 10 10 green light.

Copilot. Thanks Captain. I think I might have turned you a bit quick if necessary. I'll give you vertical speed and we'll just follow the glide slope.

Copilot. OK

Capt. NAV green

Copilot. Give me runway heading please Captain.

ATC Clear to land.

Capt. OK NAV lights are green, go around armed.

Copilot. Thank you.

Capt. Can I give you missed approach altitude?

Copilot. Missed approach altitude please.

Capt. 3000 set.

Copilot. And ...

Capt. Check speed. I'll give you flaps 20.

Copilot. Flaps 20.

Capt. Speed will be good. Just leave the power where it is, just leave the power 146.

Copilot. And gear down Captain.

Capt. 22 in the green light gears down. Landing checklist down to ... please OK now you can reduce power slowly. (Checklist). Flaps 25

Copilot. Flaps 25 please Captain.

Capt. It's armed - thank you. 25 25 you got?

Copilot. Thanks flaps uh 30 Captain.

Capt. Flaps 30 and speed about 131, that's plus 5.

Copilot. Thanks Captain. It's 30 30 the green light. Thank you just relax, just relax. Now slowly get it up that's it now just leave the power see what the speed does, then do something. That's it now you're doing fine. OK that was minima and we're clear to land.

Copilot. Thanks, Captain.

Capt. 90 knots 80 knots 70 - 60 and we'll take the second right. OK you can come out of reverse. OK standing by for 20 knots.

Transcript Crew E

Capt. Alright after start please.
Copilot. OK after start checklist, say
Capt. Said there's a bit of anti ice on please
Eng. Is that what they said?
Capt. mumbles - alright.
Eng. Thank you.
Capt. OK after start
Copilot. Anti ice.
Capt. On.
Copilot.
Capt. Zero.
Copilot. Electrical.
Eng. We have no lights, essential normal.
Copilot.valve switches
Eng. Checked open.
Copilot. Hydraulics.
Eng. Auto and normal.
Copilot. Doors.
Eng. All closed.
Copilot. Ground equipment.
Copilot. Clear.
Copilot. Clear my side, after start checklist complete.
Capt. OK and you can hand that over to Bob.I.
Eng. Thank you.
Capt. OK the lights off.
Copilot. OK.
Capt. Let's just have a bit more light on this. How do you like the lights?
Copilot. Uh, it's fine thanks.
Capt. OK?
Copilot. Yes.
Capt. Alright, you have control.
Copilot. OK, thank you. I've got control.
Capt. Springbok 239 taxi.
ATC Springbok 239 taxi holding runway 03.
Capt. Holding 03 Springbok 239. OK on the line. Lights OK. Bill.
Eng. Thank you that's fine thanks.
Copilot. 10 flap please.
Capt. 10 flap 10 selected.

Copilot. OK can I give you my briefing so long Captain?

Copilot. OK.

Copilot. From a hundred knots this will be a goal orientated take off. In the event of a decision to stop before V1, which is 129, one hundred and 29 knots I will apply full brakes, disengage throttle close thrust levers, raise the speed brakes manually, apply reverse thrust on symmetrical engines and the engineer help me there.

Capt. Full reverse thrust.

Copilot. Full reverse thrust on symmetrical engines, OK the engine ... in the flight path is climb straight ahead, on heading 5 DME right hand turn climbing to 6 400 feet uh, 430 feet heading t November Lima, climb. Will be 6380 further climb will be under radio control and contact ATC as soon as possible.

Capt. OK will do.

Copilot. The takeoff briefing says takeoff will be on runway 03 left, uh, we have V1 129 V rotated, 129 is V2 146 knots.

Capt. I'll deal with that, just give me the departure briefing.

Copilot. Uh, departure SAD says it's uh we're going to be ding No. 2 Alpha departure, we're going to climb straight ahead to Ja Smuts 5.5 DME where we're going to be turning right.

Capt. Ja.

Copilot. 5.5 DME? crossing 8000 feet that shouldn't be a problem.

Capt. Ja.

Copilot. And at flight level 90 we'll set course as per flight plan.

Capt. OK. We'll just set it to 90 there hey?

Copilot. Yes 90 set.

Capt. It's only at, we'll go to 90 climb to 130 and when we get to 130 thats when we can turn right OK?

Copilot. That's right OK.

Capt. Right, OK and can I go in with ?? Ready Bob?

Eng. Thank you.

Capt. To the left, left aileron spoiler up right aileron down and zero to the right right aileron spoiler up left aileron down zero forwards. 2 indices and zero back 2 indices - feels very light and zero and the rudders, going to the left alright?

Copilot. Alright.

Capt. OK 2 indices, full left and zero and going to the right. 2 indices all right, and zero 148, OK because the packs are still on 148.

Eng. Ja.

Capt. 148 check four times the speed 129, 129, 146, 186 226.

Copilot. 226

Capt. 10 flaps required 10, 10 green light and we've got 2 and 3/4 unit set, switch set, light out. Read the before take off checklist please.

Eng. Thank you. The before take off flight and instruments.

Capt. Alive.

Eng. Flaps.

Capt. 10.10 green to light.

Eng. All greens, light controls.

Capt. Checked.

Eng. Stabilizer trim

Capt. 2 3/4 set switch set light out.

Eng. Thank you, the galley power is on, the APU is off, fuel is set to takeoff with the heat off airconditioning and air pressurization, set and auto and that's it, lights.

Capt. Checked.

Eng. Checked at the back. Take off data.

Capt. Reviewed.

Eng. Take off briefing.

Capt. That's completed.

Eng. Thank you that's to the line

Capt. Thanks . I take it the cabin crew are seated.

ATC. Springbok 239 tower 118,1

Capt. 118,1 Smuts tower Springbok 239, good afternoon, we're approaching the hold.

ATC Roger Springbok 239, the surface wind is 130, less than 5 knots, visibility at the end of the runway is down to 300 metres. You are clear to takeoff and your airborne frequency is 12415.

Capt. Roger 124.5 airborne clear for takeoff, and could you give us the midzone on the rollout as well please.

ATC Uh, the midzone is round about uh, the reading is actually 550 metres and the end 300 metres.

Capt. Thank you Springbok 239. OK so we can go to that 300 meter is alright.

Copilot. Yes.

Capt. At Johannesburg and uh, get down to, to about 200 at Jo'burg, can I take it down to the line? Can I take it down to the line. OK we'll do all this put the radar on the transponder. Can you to the body gear please Bob?

Eng. Cabin Crew.

Capt. Alerted.

Eng. Landing and strobe lights

Capt. They're on.

Eng. INS transponder.

Capt. Set.

Eng. The pac valves are all off, ignition, flight start, we're standing by body gear, takeoff clearance.

Capt. OK and we have the takeoff clearance hey, that has been obtained.

Copilot. Obtained.

Eng. Obtained, thank you standing by body gear.

Copilot. Standing by body gear.

Capt. Alright, we can see it looks alright it's clear

Copilot. Yes, What we can see.

Capt. Springbok 239 could we just have the runway lights up please on max.
 ATC Will do.
 Capt. OK we're going to use this, I'll put EPR on the meantime, do you just want to get back onto the centre line and we'll go from there.
 Copilot. OK we can disarm the body gear.
 Capt. OK body gear disarmed.
 Eng. Body gear disarmed, that's before takeoff checks completed.
 Capt. OK let's go clear for take off.
 Copilot. OK standby for take off.
 Eng. Thank you.
 Capt. Little bit further up, just get the back of the thrust levers up to about here.
 Copilot. OK.
 Capt. There we go OK.
 Eng. 1.1.
 Copilot. Set reduce thrust.
 Capt. OK here comes.
 Eng. Auto throttle in.
 Capt. EPR.
 Eng. Thank you.
 Capt. Wind is slightly from your right.
 Copilot. Thank you.
 Eng. 80 knots throttle hold.
 Copilot. Checked.
 Eng. Thank you and reduce thrust set.
 Copilot. Thank you.
 Capt. V1 rotate 50 degrees. What does it look like.
 Copilot. Gear up please.
 Capt. Gear up. Indicated air speed alright?
 Copilot. Indicated air speed, thank you.
 Capt. OK, one left drift, I'll put in one right. Springbok 239 Good afternoon.
 ATC Good afternoon to you. Springbok 239 climb level 130.
 Copilot. 130
 Capt. 130
 Copilot. and Engineer. 130 set, thanks.
 Capt. Climb thrust?
 Copilot. OK climb thrust please.
 Eng. Thank you.
 Capt. And the gear is clean. Sorry Bob, for crossing you. Uh, can't smoke it's a domestic flight.
 Eng. Ja.
 Capt. You can cause it's a 239 number.

Copilot. OK vertical speed.

Capt. One mile to go hey.

Copilot. One mile to go vertical speed 1200 please.

Capt. 1200 you say, OK that's what you've got.

Eng. Climb thrust set.

Capt. Level 90 standard 1013.

Copilot. 013.

Capt. And that's five and a half miles.

Copilot. Turn me right please heading 0....

Capt. Right. OK speed's alright.

Copilot. And, flap 5 please.

Capt. Flap 5 206 OK then 5.5 green.

Copilot. And flap, please.

Capt. Just gonna and what I just wanna do I just want to pitch you up a bit here, OK so that it doesn't run away. Selected and you want 226 there hey.

Copilot. 226 Um.

Capt. 310 I'll sort that out just now. Still running.

Copilot. Still running thank you.

Capt. Little bit right there onto November Lima, just keep the speed down there. I'm going to give you indicated air speed. Alright, so that it doesn't runaway because otherwise the flaps are going to get damaged. 1.1 green.

Copilot. Flaps up please.

Copilot. Flaps up please.

Capt. OK and we'll stick in here 250 initially until the leading edges are away.

Copilot. OK.

Capt. Flaps up no lights. And now we can go through the 298 knots here hey.

Copilot. 298 yes, 298.

Capt. And I'll give you vertical speed. There she's gone ALT select.

ATC Springbok 239 climb level 290 and area 1283.

Capt. Climb level 290 and 1283 cheers. OK it's now 290. I'll sort it out for you in a second, it's ALT select is armed, and would you like, say vertical speed and a bit hey.

Copilot. Vertical speed. yes.

Eng. (Talks while the others are talking)

Capt. About 1500 for the meantime. We're through 130, we can turn right and I'll give you direct to 1 Alpha. Just see whether that looks good. Is that right? Can I give you INS mode?

Copilot. INS Thank you.

Capt. OK. INS we have. That will be probably round about 180, well looks about 160 somewhere around there.

Eng. OK Standing by landing lights and seat belts.

Capt. Looks alright out here.

Eng. Thank you after take off checklist completed.

Capt. Thanks.

Eng. Thank you.

Capt. Alright what time were we airborne.

Eng. About 3 minutes ago.

Copilot. 3 minutes ago 26.

Eng. 16 ja.

Capt. Whenever you're ready we can go to PMS.

Copilot. We can go to PMS now.

Capt. OK PMS PMS ALT select's off and auto throttle in.

Eng. Thank you.

Capt. Service is poor.

Eng. Very poor, I think they've all died at the back.

Capt. OK that's 322 and from there we're going to go to November Hotel, 225... enjoy the flying there.
Thank you.

(Heart attack passenger briefing.)

Capt. OK is he, is his condition stable now or uh.... OK alright, uh, just hang on one second, let's have a look see did you hear that?

Copilot. Yes, uh.

Capt. Right, stick the autopilot in for a start, so that we can all think about this. The guy is about to die, we don't have any real no.. we have no real medical... apart from a nurse.

Eng. Ja.

Capt. Can I speak to that nurse please? OK well I would like to have a word with her, if she can possibly spare a moment. In any case in the meantime we're going to try to get to the nearest place, OK but I need to speak to her. Looks like we're stuck with that.

Eng. Ja, from our side the pressurization's going to be the same, so there's no effect on his health on that side.

Copilot. I'd like to review the weather, get Jo'burg's weather.

Capt. Ja, just keep flying there, we're heading for 290 which is nearly 2 miles away.

Copilot. 290.

Capt. Let me just ask them what the weather's like.

Eng. Thank you.

Capt. Um, let's just get to 1283 here. Jo'burg area Springbok 239 good afternoon.

ATC. Afternoon Springbok 239 good afternoon, go ahead.

Capt. We have uh, an ill passenger on board and it would appear we need to return to Johannesburg. Could you give us the latest weather please.

ATC. Roger RVR is deteriorated right down to 200 metres, the temperature 5 due point 5 QNH 1029. How visibility procedures in force.

Capt. OK can you give us uh, ask the people if we need trend on that weather please.

ATC. Roger it seems to be deteriorating at the moment.

Capt. OK thank you, and if you could give us Bloemfontein weather please, uh, in the meantime.

ATC Roger standby.

Capt. OK guys listen up, it says here it's 200 metres and deteriorating now, the aeroplane's fine, if the airfield was a bit more capable, I would be quite tempted to have a go at that. I don't know what you think about it, but Johannesburg is not it's only a CAT 2 ILS.

Copilot. ILS.

Capt. And if it's getting worse we don't have the lighting for...

Eng. Sure I second that.

Capt. So I don't think Jo'burg is a good option at this time.

Copilot. We'll see what is Bloemfontein's weather and um...

Capt. Bloemfontein's about the close... where else is close by... Waterkloof?

Copilot. Waterkloof, Waterkloof will be also

Capt. I to go. Johannesburg Springbok 239 while you're about will you get Waterkloof's weather please.

ATC Roger the uh, about 10 minutes ago we got Waterkloof and it was uh, also fog- bound.

Eng. OK we need better details than that please.

Capt. Could you give us an actual on Waterkloof on the hotline?

ATC OK standby.

Eng. Sounds like we're committed, either Durban or Bloemfontein.

Capt. I'm going to put Brava Lima on air, I think it's 3180 check on that. We're going more or less in the right direction so let's stay with that for a little while until we've made up our minds here.

Eng. And both are good medical facilities, so...

Capt. Absolutely ja.

Eng. Ja.

ATC Springbok 239 Johannesburg.

Capt. Go ahead. Uh Durban is CAVOK, Bloemfontein CAVOK, Waterkloof, they've got about 400 metres visibility.

Capt. OK. 400 and uh, no ceiling I guess.

ATC Negative, unreadable.

Capt. Looks like we're going to have to keep on our way here and I'll let you know our intentions shortly.

OK I just want to see, we've got the DME otherwise we've got the PMS.

Eng. Skipper, at this stage we haven't got the Durban and Bloemfontein's weather did we?

Capt. Ja we did.

Eng. Did we? Clear, OK thank you.

Capt. It's just a matter of which one is closest. I'm just going to stick it in here, uh, I'm going to put Durban just can you just stick in. I'll read to you Bloemfontein.

Copilot. Ja OK.

Capt. Is South 29060

Copilot. 29606.

Capt. And east 26181.

Copilot. 26181.

Capt. OK stick that one in there 200 miles OK and now let's go uh, doesn't matter let's go to the next 99 to where is Bloemfontein. Look at that hey. Just page it back and let's put Durban in, that is Durban.

Copilot. That is Durban.

Capt. Let me just check that the co-ords are right. South 29584.

Copilot. Uh, negative I've got here 290.

Capt. Just stick these in ... South 29583.

Copilot. 295.

Capt. 583.

Copilot. 583.

Capt. East 305070.

Copilot. 305070.

Capt. 50.

Copilot. OK sorry 570.

Capt. East 30570

Copilot. East 570.

Capt. OK and that's 226 miles. It's a toss up.

Copilot. OK.

Capt. What was the other one?

Eng. On board manager.

Capt. Let's have a look at it now.

Eng. I just want you to keep us informed please what's happening?

Capt. OK what I'm going to do is I'm just going to talk to Springbok Jo'burg and ask them which has got the better facilities, uh, with the most convenient facilities. Closest to the airport.

Eng. Ambulance ja.

Capt. Alright, just give them a try. Just listen out please, OK, I'll be with you in a sec.

Eng. Sorry.

Capt. 13025 hey. You just keep an eye on the aeroplane, we're going in the right direction so we can keep our options open in the meantime Springbok 239 13025.

ATC Springbok 239 Go ahead.

Capt. Roger we have a problem here on board, we uh, have a passenger who appears is uh, critically ill. Jo'burg is out. Durban and Bloem are about equidistant. Could you just get onto our local people and see which has the facilities that would be available, we'd be on the ground in either place in about 25 minutes. Can they have them on the spot and call back to us. It would appear to me that as everybody else is going to durban we may as well head there because there's no difference in the distance. But uh, we'd like to know that there is medical assistance available. It would appear that this might be a heart attack.

ATC. Roger standby captain, we'll get back to you.

Capt. OK thinking a bit further about that... Durbs... if we go to Bloem, it's the same distance, there's no difference. Uh, if we go to Durban then all the other folks also they get to where they want to go.

Eng. Ja makes sense.

Capt. There's only 10 miles difference in it.

Eng. And Addington hospital is not that far away.

Capt. Addington is probably the closest, hey?

Eng. I'm not sure but I would say it's close ja.

Copilot. Addington is closest.

Capt. 25 minutes to get there, the ambulance will be there in any case.

Eng. Ja.

Capt. The thing we must do is...

Eng. Flat it.

Capt. Flat out on the ... just wind it to cruise.

Eng. So we're going

Capt. Manual and go point 88. OK it's in knots there, you can just go 300 and 350 knots - alright 350 ja. 350 will be good at this level in any case.

Copilot. OK 350.

Capt. Doesn't want to take it OK just just...

Copilot. Doesn't want to take it.

Capt. Just go to uh, just take it off.

ATC Springbok 239 ops.

Capt. Go ahead.

ATC 239 Durban and Bloemfontein will have helicopters standing by to transport the passenger straight to hospital.

Capt. OK, we're going to go to Durban because the distance is the same and we'd like to have them at the aircraft if we could even cut out the taxing if possible if they could get them onto the end of the runway.

ATC OK we'll get the ambulance at the end of the runway, and the helicopter on standby.

Eng. Thank you thank you I'm with you. (to Copilot). Alright so let's have a look, let's summarize what the hell we've done here. Jo'burg is out.

Eng. Ja.

Capt. Bloemfontein is about the same.

Copilot. Same distance as Durban.

Capt. Durban is the same, the weather is the same. Everybody can get to where they want to go if we go to Durban. And this guy's chances are just as good. hey.

Eng. Yes, excellent.

Capt. Happy with that?

Copilot. And the passengers will be happy as well.

Capt. OK anybody got any better ideas?

Eng. No that sounds good to me, it's just that nurse hasn't come back to us at all.

Capt. I'll tell you when to descent, we're going to go absolutely on the ... alright. Let me just put it in here.

Eng. (.... to nurse).

Capt. I'll be with you in one second.

Eng. mumbles.

Capt. Taking us off PMS here. That should take us at point 8.8 which will be on the clackers alright? Hello flossie? (speaks to nurse) (copilot & engineer converse).

Capt. Now let's see. We're going to Durbs so we want 1125 here. Springbok 239.

ATC Go ahead 239.

Capt. Roger we do have this emergency. We'd like to declare an emergency. We'd like direct clearance and radar vectors. for 23 at Durban.

ATC Roger, you're cleared direct Delta November Victor. Would you like to maintain level 290?

Capt. Affirm level 290. OK keep this fast. keep the TAS up.

ATC We'll advise Durban to be ready for you.

Capt. OK thank you.

Eng. VA 125

Capt. Thank you 125.

Copilot. Thank you.

Capt. 65 205.

Eng. And did we get the temperature and that ... I.

Capt. I'll get it for you now, in fact the ATS is on now.

Eng. Is it thank you I've got them on.

Capt. If the ATS's just winds up there, it will give it to us now. What about Jo'burg guy's. I can't see that it's a good option.

Eng. No, if we didn't get in we'd delay time and this is an emergency.

Copilot. Ja definately.

Capt. Well we're not going to get in with that weather. But even to bust that you know we could go for it in an emergency but I think we would be putting everyone else at risk.

Eng. Ja sure, you know we don't know what the systems going to do.

Capt. And it won't be that much quicker, it's going to take us 15, 20 minutes to get there in any case. Alright, decision made, let's go with it. We will live with it. whatever. Durban alright?

Eng. OK.

Capt. Now we're cleared direct Delta November Victor, which is number 4 Alpha.

Copilot. 4 Alpha.

Capt. Put it in there. We're going flat out, we're going to descent also flat out.

Copilot. mumbles.

Capt. Remember, the aeroplane is going to descent very fast, so.

ATC Durban - surface wind is 130

Capt. OK got that Bob?... I'll give you a hand through it but you keep flying.

Copilot. OK.

Capt. Because uh, that gives me a bit of time to mess around here and. what we're going to descend right on the ... so from 29000 we normally need about 87 miles.

Copilot. 87 miles.

Capt. We're going to descend, we're going to keep it on until we get to 50 miles.

Copilot. 50 miles.

Capt. And we're going to go down absolutely flat out and we'll pick up the speed brake, alright.

Capt. OK. We must keep the speed up all the way.

Copilot. OK. I'll tell you when to run the flaps and everything OK?

Copilot. OK Captain, thanks

Capt. Keep it in very tight. Have you got a moment there Bob?

Eng. Thank you. I'm with you.

Capt. Alright here it is, let's have a quick briefing on this. Durban ILS runway 23. 4 March 94 is the date of the plate.

Eng. Yes.

Capt. 1103 at 25 feet is the airfield elevation. It's going to be in vectors 5100 feet initially. I'll radar chart and I'll monitor it. Um in for a right hand.

Eng. A right hand.

Capt. Turn to the ILS 236 inbound and the ... 2000 feet. The outer marker at 1296 feet.

Eng. 1296.

Capt. 1296 feet and a minima of 225.

Eng. 1296.

Capt. 225. And 800 metres visibility, but it's CAVOK, so it shouldn't be a problem.

Copilot. Shouldn't be a problem.

Capt. Alright do you just want to review the go around there please.

Copilot. OK the go around is going to be go around trust, disengage auto throttle, um, go around thrust, flaps, positive thrust.

Capt. Go around attitude.

Copilot. Go around attitude.

Capt. That's it.

Copilot. OK . Flaps to 20.

Capt. Right.

Copilot. Positive climb gear up.

Capt. OK.

Copilot. And, we'll clean up as soon as possible, contact ATC, uh, the must approach procedures to climb onto runway heading to 3000 feet which we'll set up.

Capt. OK.

Copilot. And um then turn left and return to Delta November, as directed.

Capt. We've got Delta November these, the other one we can put is Romeo Uniform here.

Copilot. Romeo Uniform yes.

Capt. 235?
 Copilot. 235.
 Capt. Let's get hold of this bunch here ting, ting.
 (Speaks to cabin crew.)
 Eng. What did you make it? What was it?
 Copilot. Altitude is 5000.
 Eng. Oh, make it 6500.
 Capt. 150 225 is set and 1290 something
 Copilot. 1296
 Capt. 96 thanks. How are we doing. 136 miles to go. Gee, it's taking a long time isn't it.
 Copilot. Ja.
 Capt. Air Springbok 239 can we go over to Durban please?
 ATC Roger Durban's waiting for you.
 Capt. What frequency?
 ATC 199 please.
 Capt. Thank you. Squawk 77 put it on please.
 Copilot. 277?
 Capt. No 7700. Durban Springbok 239.
 ATC Springbok 239 Good afternoon, go ahead we have that you have an emergency, you have priority
 no. 1 Durban conditions are CAVOK. The surface wind is almost calm runway 23 is yours.
 Capt. Roger, thanks we'd appreciate that ... vectors it will probably be for a short ILS up to 23.
 ATC Roger copy.
 Capt. Hell I can see the sea, so we must be getting close.
 Copilot. Yes, close.
 Capt. OK the same 2 altitudes initially from 87 no that's East London, not going to help us much, how
 about Durban - 82 initially.
 Copilot. OK.
 Capt. OK within 50 miles 6000 and then down to 5 and 40 miles. I'll master this as we descend and we'll
 take it from there alright?
 Copilot. OK that's fine.
 Capt. Why's it slowing down? Here it comes again. OK. Is there anything else that we can think of? As
 I understand it... we can't do anything more.
 Eng. No.
 Copilot. We have ground crew standing by don't we?
 Capt. Yeah, we'll have everybody.
 Copilot. Ja that's fine.
 Capt. Let's ask Durban traffic what's going on there.
 Eng. Ja, if the helicopter's there, what the hell.
 Capt. Durban traffic Springbok 239
 ATC Springbok 239 go ahead.

Capt. Roger we're a hundred miles out and we'll be on the ground in 15 minutes, can you give us the status of what's happening on the ground there?

ATC Captain, everyone's waiting for you at the moment, there's a helicopter and an ambulance standing by right at the end of the runway now.

Capt. OK we'll need some stairs there as well so that we don't have to blow the chute, we can get this person off in as short a time as possible.

ATC Roger the engineers have taken the stairs out towards the end of the runway.

Capt. OK

Eng. Hell, they're on the ball today hey.

Capt. Durban?

Eng. Ja.

Capt. Lost the test.... OK still need another 50 miles. We seem to be going bloody slowly. It's the wind block, that's why... tail wind 614 ground speed, we haven't had that all the way. I can tell you that much.

Eng. No I don't think so.

Capt. It's a new inclusion. OK that means.... 50 will still be alright, we'll just slow it down. run the flaps, last minute.

Eng. Alright.

Copilot. 85 or 90 you would like to start the descent?

Capt. About 50.

Copilot. 50?

Capt. OK we go down very fast, with the speed brake up.

Copilot. Very fast ja.

Eng. Ja.

Capt. And up here we TAS of 530 as soon as we start descent it's going to drop off. That's not really true, the TAS will stay up, but uh, closer we can go in with that using the wind there 600 knots, 600 ground speed, we'll use it as long as we can and then we'll just pull the plug.

Copilot. So disengage the speed brakes, to apply descent at a maximum.

Capt. Yip.

ATC Springbok 239 Durban when ready descent 1130.

Capt. When ready descend 1130 Springbok 239. 130

Copilot. 130 in the window.

Capt. OK and I suggest you put it into ALT Cell, take the auto throttle we can leave the auto throttle in.

Copilot. OK.

Capt. Just put speed in there.

Copilot. OK.

Capt. That'll keep the speed where it is and then when we're ready. we just go.

Copilot. Got indicated air speed.

Capt. OK once we want to go down not yet.

Copilot. Not yet, ja.

Capt. And then of course we can only use vertical speed with auto throttle speed.

Copilot. Can't use it no.

Capt. Indicated air speed wont work together with it. I'll put this on ALT hold just to keep the flight direct right OK?

Copilot. OK.

Capt. In the meantime we're all set up? That's good. In fact the easiest way is just to leave it in PMS there, it's got 345 knots in there.

Copilot. Ja.

Eng. Ja.

Capt. We'll just disengage it when we get down, we'll put it back into PMS.

Copilot. PMS

Capt. 20 miles.

Copilot. 20 miles.

Eng. It feels a lifetime for us, imagine how it feels for that guy hey?

Capt. For that guy - you're right Bob. I was just thinking the same thing. Tempted for that return to Jo'burg but um too dicey. The best thing to do will be to home into the ADF. I'll ask him for clearance. Cause that will give us a right hand base.

Eng. Ja.

Copilot. Shortest distance right hand base.

ATC Springbok 239

Capt. To ATC..... OK you're ready for it? (to Copilot).

Copilot. Yes.

Capt. Just go back to PMS there. PMS and engage it that's it. OK throttle hold, and speed.

Copilot. OK can I disengage.

Capt. No leave it, leave it there, shouldn't come back. PMS 5000 why are we not going down? Select. Descend. Descend manually.

Copilot. It's on PMS.

Capt. Throttle hold. OK just close them manually just pull them closed. We can leave it, using PMS, OK, and you can pick up the speed brake now. There you can see Durban. there's the, the harbour. So that's where, just about where we're aiming right now is dead right - you got it?

Copilot. OK that's fine.

Eng. OK.

Capt. How's the cabin Bob?

Eng. Yes, I only have 2 and a half thousand to go.

Capt. I'll just up that speed a bit, because now that we 360 doesn't want to doesn't like it.

ATC. ...

Capt. OK, he said 1020 now 2500 feet now

Copilot. Checks.

Capt. OK we're not going anywhere with this thing. I'm just going to set it up for you. autopilt's still

engaged. Vertical speed, I'll put in as much as we can. ALT select is armed, armed right.

Copilot. Armed, checked.

Capt. And auto throttle just flick that - it's OK there it goes. And we'll try and descend right on the checkers here. 30 miles to go 23 miles, we're looking OK 5000 feet. OK now we want to ... but go for the ADF's alright. (to ATC...)

Copilot. I'm taking out INS captain.

Capt. Yip OK heading mode onto the ADF's and we'll set up 236 up here OK?

Copilot. OK.

Eng. 236 that's for the right turn.

Capt. Seems we're going down like a brick here Bob, I'm just going to do all this.

Eng. Yes.

Capt. OK.

Eng. Seatbelts.

Capt. And the bugs are set at 125.

Copilot. 125.

Capt. 165, 205.

Copilot. 205.

Capt. We've got 225 and 1296. So to go around there please will. This is set on heading that one was there and ... 48, we've actually catching up so fast we might have even started too early, we can just, I'll let you know to take the speed brake away in a minute. OK descend approach please.

Eng. OK descend approach auto brakes.

Capt. Uh, let's have them on OK.

Copilot. Yes.

Capt. We'll take it medium.

Copilot. Medium is fine.

Eng. Landing lights.

Capt. ON.

Eng. Landing data.

Capt. ...set.

Eng. Radio altimeters

Capt. They are set.

Eng. SELCOR

Capt. Off.

Eng. OK the fuel is set for landing with the heat off.

Capt. OK, and I think you can start taking the speed brake away now. Keep the speed up you can always pick it up again once....

Copilot. Yes.

Capt. We don't want to we want to try and keep that speed up as long as possible.

Copilot. As long as possible, that's fine.

Eng. Pressurization is set and ... lights and circuit breakers here been checked.

Capt. Checked.
 Copilot. Checked my side.
 Eng. OK that's through 10 000 feet.
 Copilot. OK let's
 Capt. Alright leave it there. I'll just slow you down just a touch here, OK?
 Copilot. OK
 Capt. Just till it stops, and then I'll go back to indicated air speed.
 Copilot. OK
 Eng. Altimeters set and
 Capt. We've got 1020 set and cross checked and the ... set 7800 slow that down.
 ATC
 Capt. (To ATC)...
 Eng. That noise must stop.
 Capt. OK it's not that serious, it's just the needle.
 Eng. Radio nav instruments.
 Capt. They are, we've got the ILS I'm just going to put it on here 1103. and your side, got the DME hold on. That's indicated air speed there. Alright 17 miles, alright, now we're going to have to pull the speed brake again so that we can slow the aeroplane down so that we can run the flaps OK? We've got 2000 feet to go. And I'll go back to vertical speed and level it off alright. See that 16 miles on base there - we're going to have to slow it down quite...
 Eng. 1000 feet.
 Copilot. 1000 feet.
 Capt. Thank you one to go. That's the way ALT select is green.
 Copilot. ALT Cell.
 Capt. Wind our speed back 15 miles. You want to take a little bit to the right here so that we head towards those ADFs.
 ATC ...
 Capt. OK we're clear to 2000.
 Eng. 800 feet to go - computer switches.
 Capt. They are set.
 Eng. Thank you descend approach checks completed.
 Capt. 1187 OK, just remember the old speed brake. How are we doing? 12 miles. Start coming away with the speed brake and just let it slow down.
 Eng. 2000
 Capt. 2000 feet let's just make sure she levels off here. There she goes.
 ATC ...
 Capt. OK want to try it manually?
 Copilot. Yip. disengaging.
 Capt. Let's just take this away because all the way away alright?
 Eng. Thank you.

Copilot. You've got enough room here, and I'm just heading you. we'll just head towards those ADF's that's fine 8 miles looks good. don't descend any...

Eng. 1500 feet.

Capt. As you see the airfield over there? I can't seem to just head straight over there. OK just head for those beacons that will give you a nice final approach.

ATC. ...

Capt. OK you can start running your flap now.

Copilot. OK Flap one please.

Capt. Alright flap 1 selected.

Copilot. Speed 210, 206.

Capt. 206, you got.

Eng. It's 1,1 green.

Capt. Can't see this over here. OK you can stay at 1700 feet that's OK.

Copilot. OK

Capt. That's fine, I'll give you ALT hold just keep it where it is.

Copilot. OK flap 5 please.

Capt. Flap 5 selected.

Copilot. 186.

Capt. And 186 is coming on see the glide slope you must start descending now.

Copilot. Glide slope.

Capt. I'll give you vertical speed, till we can see the airfield. See you can get the runway light there OK whenever you can.

Copilot. Runway lights.

Capt. You can turn straight onto it, just follow the glide slope down. OK

Copilot. OK.

Capt. I'll give you about 800 feet a minute that should keep you on until we get to the localizer. We've got an ILS mode here.

Copilot. Thank you.

Capt. I'll just run the flaps, you keep flying those bars alright? NAV glide slope nav green glide slope green. I'm giving you 10 flaps. 170 160...

Eng. 10 flaps selected 10,10 green.

Capt. Just wind the bank in so you go on the centre line. Keep her going down. Ok 10,10 green flaps 20 selected, 146. Just keep an eye on there, you're looking dead right. Speed will come off slowly. Turn onto the heading bank in the meantime. That's fine. Now start rolling out and ease the rudder descent a little bit there, you're going down a little bit too fast. Gears down and the green light and descent 5. Read us landing checklist please Bob.

(Checklist).

OK, a little bit of thrust the speed is dropping off quite fast there. Just fly those bars and you're in the pink dead right OK 25 flap OK and I'm taking the flap all the way through to 30 and you're going to have to trim it now up a little bit, as it comes off here, allow the speed to drop off to the left. It looks great.

Eng. Yes.
Capt. 30, 30 green.
Eng. All greens, hydraulics are normal the landing checks completed.
Capt. OK here we go we're now at 300 feet. Remember you must look at the far ...They must go red, white, white, so we're a little bit low. Speeds a little bit high. OK keep it descending not too fast on the descent.
Eng. 100 feet 50.